Chapter 4
ENVIRONMENTAL CONSEQUENCES AND RECOMMENDATION

The No-Build Alternative, Fort Hamer Alternative, and Rye Road Alternative are being recommended for further consideration in this chapter. The analysis and evaluation of impacts resulting from the two build alternatives is based on a new two-lane bridge for the Fort Hamer Alternative and the widening of the Rye Road Alternative from two to four lanes. Each of these alternatives has been evaluated and compared to the others based on a series of environmental considerations. These considerations are categorized as:

Social – those issues related to the existing and planned human environment:

- Socioeconomic Conditions
- Land Use Characteristics (Existing and Future)
- Traffic
- Community Cohesion
- Relocation Potential
- Community Services and Facilities
- Environmental Justice
- Controversy Potential
- Utilities and Railroads

Cultural – those issues related to archaeological and historic resources:

- Archaeological
- Historical

Natural – those issues related to the natural environment:

- Land Use/Vegetative Cover
- Wetlands
- Essential Fish Habitat (EFH)
- Wildlife
- Threatened and Endangered Species
- Aquatic Preserves
- Water Quality
- Outstanding Florida Waters (OFWs)
- Wild and Scenic Rivers

- Groundwater
- Floodplains and Floodways
- Coastal Zone Consistency
- Coastal Barrier Island Resources
- Farmlands
- Visual and Aesthetics

Physical – those issues related to the human, built, and natural environment:

- Noise
- Air Quality
- Construction
- Contamination
- Scenic Highways
- Navigation

The following sections provide the results of this analysis and evaluation.

4.1 SOCIAL IMPACTS

4.1.1 SOCIOECONOMIC CONDITIONS

This section presents discussion of the potential social and economic effects that may result from the implementation of the No-Build Alternative, Fort Hamer Alternative, or Rye Road Alternative. Construction of the proposed alternatives has the potential to influence the environment through both direct and indirect effects, and may range from clearly observable impacts within the right-of-way (ROW) to less apparent impacts some distance from the project corridor. Though primary analysis of the socioeconomic conditions would occur within the 0.5-mile project buffer area (study area), the elements of the sociocultural environment would, where relevant, be examined at the regional and local levels to identify those effects that may be more dispersed geographically.

4.1.1.1 Impact to the Population

As described previously in Section 3.1.1.1, the population that resides in area of the Proposed Action is rapidly increasing in number, and is generally younger, wealthier, and less diverse than the population present within Manatee County as a whole. The economic and age characteristics of the existing population identified within the area of the Proposed Action suggests a reduced presence of groups less able to adjust to changes in the built environment.

No-Build Alternative

The No-Build Alternative would implement only those improvements already funded by the Florida Department of Transportation (FDOT), the County, or non-governmental agencies, and would include no additional road capacity improvement. The limited action associated with the No-Build Alternative provides little potential for impact to the demographic composition and population trends present within the project area.

Fort Hamer Alternative

As described previously in Section 2.5.2, the Fort Hamer Alternative would, through the construction of a new two-lane bridge over the Manatee River, connect two existing local collector roadways. The new connection provided by the bridge would improve north/south travel within the County. The bridge would connect two areas of the County with a similar demographic make-up. Additionally, the populations present both north and south of the Manatee River are expanding at similar rates. The provision of additional roadway capacity would likely have little effect on demographics and serve to support the trend in population growth in the area. This alternative is anticipated to have little effect at the regional level as the proposed bridge would operate as part of the local collector network and play a minor role in supporting regional traffic.

Rye Road Alternative

The Rye Road Alternative includes the widening of Rye Road, Golf Course Road, and the northern segment of Fort Hamer Road from two to four lanes. Much like the Fort Hamer Alternative, the Rye Road Alternative passes through areas of similar demographic composition that are expanding at similar rates. The widening of the existing Rye Road corridor to four lanes would likely support the current trend in population growth, but have little effect on the demographic composition of the area. This alternative is anticipated to have little effect at the regional level as the proposed capacity improvement would expand a part of the local collector network.

4.1.1.2 Impacts to the Economy

As described previously in Section 3.1.1.2, the economic activity present in Manatee County is based primarily in the service sector with the largest employment centers generally located west of Interstate 75 (I-75). In the area of the proposed alternatives, employment is focused along U.S. Highway (US) 301 and State Route (SR) 64 with relatively few jobs present along either the Fort Hamer Alternative or Rye Road Alternative. Further, comparison between the employment data presented in Figures 3-2 through 3-7 and existing use shows that no major employment centers [traffic analysis zones (TAZs) containing >500 jobs] are present along either corridor, and those areas of existing employment found to be present typically coincide with the location of either golf courses or schools.

As discussed later in Section 4.1.2.1, the existing land use present within the project area is not (based on intensity of use) supportive of large scale commercial development and would not likely be altered by the Proposed Action. The small commercial centers currently present along US 301 and SR 64 would likely support the majority of future employment growth in the area of the alternatives.

Though construction of either build alternative is anticipated to have a minimal effect on new commercial development, additional metrics may be reviewed to aid in the assessment of the overall economic impact produced by the build alternatives. **Table 4-1**, identifies several major costs and benefits that may result from the implementation of the build alternatives. In the evaluation of economic benefits, the No-Build Alternative is assumed to represent the existing condition with no action taken.

TABLE 4-1
COST/BENEFIT BY ALTERNATIVE

Benefit/Cost	No-Build Alternative	Fort Hamer Alternative	Rye Road Alternative
Structure Cost*	N/A	$23,884,850	$54,386,000
Property (ROW) Acquisition Cost	N/A	$176,661	$58,472,740
Reduced Annual Tax Revenue	N/A	$714	$235,727
Induced Wages (mean wage x number of jobs created)	N/A	$12,074,350 to $16,494,790	$27,545,890 to $37,696,530
Change in Fuel Cost**	N/A	$16,466	$-8,934
Change in VHT Cost**	N/A	$ 192,096	$219,104

* Maximum Life Time Facility Costs identified in Section 2.5.
** Annual Costs, Based on Sarasota/Manatee/Charlotte Transportation Model (SMC Model) 2035 vehicle miles traveled (VMT) and vehicle hours traveled (VHT) (MPO, 2011).

Structure Cost

The first cost figure listed in Table 4-1 represents the combined construction and life time maintenance cost associated with the bridge improvements proposed as part of the build alternatives. The life time cost figures are described in detail in Section 2.5, and combine the cost of construction with the long-term cost of facility maintenance. The figures presented identify the cost of construction and operation over a 75-year period.

Right-of-Way Cost

The second cost presented in Table 4-1 identifies the estimated cost of property acquisition. The figures shown represent the estimated value of the property that would be acquired as part of needed ROW expansion. Note the ROW costs calculated at this stage of the project are conservative approximations used to compare the acquisition costs of the build alternatives.

The methodology used in the assessment of ROW acquisition began with a geographic information system (GIS) analysis to identify the areas of adjacent parcels that would be impacted by the preliminary alternative designs. Results of this portion of the analysis showed

that the Fort Hamer Alternative would require the acquisition of approximately 0.15 acres and that the Rye Road Alternative would require approximately 47.84 acres to support the planned improvements.

The second step in the analysis estimated the value of the affected property. A generalized square-foot cost was derived from the Just Market Value assessed by the Manatee County Property Appraiser (Manatee County, 2012f). The generalized square-foot value estimate was calculated by dividing the Just Market Value for each property by the area of that property then by taking the mean of the square-foot value estimates for all properties located within the study area. An average value of $10.98 per square-foot was identified as the generalized Just Market Value of land within the study area of each build alternative.

The square-foot value derived in step two (above) was then multiplied by the area of needed ROW. Adjustments to the total cost were then made to better approximate the total cost of associated with ROW acquisition. Multipliers, identified through similar action, were used to account for additional settlement costs. Historically, it has been shown that the actual cost of acquisition for residential property is approximately 2.5 times the just market value. Therefore, this multiplier was applied to the cost figures.

Finally, adjustments were made to the overall ROW cost to account for relocations. In four instances, the expansion of the ROW is anticipated to result in the total takings of a property. In these circumstances, the full value of the property was incorporated into the ROW cost estimate in place of the impacted area value. The property acquisition costs presented in Table 4-1 combines the partial and total takings figures.

Reduced Annual Tax Revenue

The reduced annual tax revenue figure presented in Table 4-1 represents the potential loss in property tax revenue that could result from the expansion of ROW and resultant reduction in the area of taxable private property.

As with the estimation of ROW cost, the estimation of reduced tax revenue associated with the development of the build alternatives was computed using a generalized multiplier. Housing data presented in the 2011 American Community Survey (ACS), 5 Year Estimate (ACS, 2011b) includes an estimate of the median real estate taxes paid for owner occupied housing within Manatee County. Additionally, the 2011 ACS provides the median value of housing for the same area. These figures may be combined to estimate the median real estate property taxes paid within Manatee County. See below for the calculation:

Median Taxes ($1,981) / Median Home Value ($195,300) = 1.01%

To estimate the annual loss of tax revenue that may result from the development of the propose alternatives, the tax rate of 1.01 percent was applied to the value of the property that would be incorporated into the ROW. The Fort Hamer Alternative would require the acquisition of approximately 0.15 acres of land with an estimated just market value of $70,664. This value

combined with the estimated tax rate would result in the loss of approximately $714 in annual tax revenue. The Rye Road Alternative would require the acquisition of approximately 47.84 acres of land with and estimated just market value of $22,880,913. This value combined with the estimated tax rate would result in the loss of approximately $231,097 in taxes annually.

Additionally, as noted above, four relocations would likely occur as part of the development of the Rye Road Alternative. The removal of these four properties from the tax base would result in the loss (based on 2012 tax records) of approximately $4,630 in tax revenue annually. Table 4-1 presents the combined potential loss in tax revenue.

Job Creation

One major economic benefit typically associated with a major infrastructure improvement is job creation. Several methodologies exist to estimate the number of jobs created by infrastructure spending. Two recent examples, outlined below, were used to establish a range in potential number of jobs created in the development of the Fort Hamer Alternative and Rye Road Alternative.

Developed by Sacramento Regional Research Institute (SRRI), the Stimulus Calculation Tool, is intended to provide governmental agencies with a means of assessing the economic impact of construction spending. The tool divides the calculation of benefit into a series of generalized groupings based on investment type and provides an estimated benefit for an average 1-year period. The most relevant classification provided by the SRRI tool to the work at hand is the Infrastructure and Public Works grouping. The SRRI tool assumes that for every 1 million dollars invested in infrastructure, 7.1 direct and 5.3 indirect/induced jobs are created (12.4 total jobs) through that investment.

The second analysis tool reviewed for relevance was the Impact Analysis for Planning (IMPLAN) modeling system. IMPLAN is used by over 2,000 public and private institutions to conduct regional economic impact analysis. A recent application of IMPLAN to the development of public transportation infrastructure in Milwaukie, Wisconsin showed that for every 1 million dollars invested in transportation infrastructure, 8.34 direct and 8.63 indirect/induced jobs were created (16.97 total jobs).

Based on the two examples identified above, a range for the potential number of jobs created by the construction of the Fort Hamer Alternative and Rye Road Alternative may be developed. As outlined in Section 2.5, the cost of the development of the Fort Hamer Alternative would likely cost $23,884,850 and the Rye Road Alternative would cost $54,386,000. These cost figures combined with the jobs estimates result in the assessment that the construction of the Fort Hamer Alternative would result in the creation of between 295 to 403 jobs and the construction of Rye Road Alternative would create between 673 to 921 jobs.

To more directly estimate the potential economic impact, the estimated number of jobs created may be multiplied by an average wage figure. The Bureau of Labor Statistics estimates that the

mean annual wage of "All Occupations" in the State of Florida in Year 2012 was $40,930. The range of potential wage increase is listed in Table 4-1.

Estimated Fuel Cost

The estimate of the impact of the No-Build Alternative, Fort Hamer Alternative, and Rye Road Alternative on fuel costs is based on a calculation that divides total vehicle miles traveled (VMT) by average vehicle fuel efficiency, and multiplies that figure by average fuel price.

The VMT estimate was derived through use of the Sarasota/Manatee/Charlotte Travel Demand Model (SMC Model) (MPO, 2011) for the Financially Feasible Plan included in the Sarasota/Manatee Metropolitan Planning Organization's (MPO's) 2035 Long Range Transportation Plan (LRTP) (MPO, 2012). The figures presented by alternative in **Table 4-2** presents the total annual VMT that would occur within Manatee County in year 2035. The VMT figure is presented by alternative allows for an assessment of the total driving activity that may be induced by the proposed improvement.

TABLE 4-2
2035 VMT

Alternative	2035 VMT
No-Build	13,762,689
Fort Hamer	13,664,913
Rye Road	13,815,741

Source: SMC Model 2035 VMT (MPO, 2011).

Estimated total fuel consumption was calculated by dividing the VMT figure produced in Step 1 by the estimated average fuel efficiency of vehicles that would be traveling on road. An average of 20.7 miles per gallon (mpg) was used as the efficiency figure based on the combined mpg estimate for all light-duty vehicles which was developed by the Bureau of Transportation Statistics in 2008. **Table 4-3** presents the total number of gallons of fuel consumed.

TABLE 4-3
GALLONS OF FUEL CONSUMED

Alternative	Gallons of Fuel
No-Build	664,864
Fort Hamer	660,141
Rye Road	667,427

Sources: SMC Model 2035 VMT (MPO, 2011). FHWA, 2008.

Finally the average cost of fuel ($3.486), taken from the 2012 AAA Cost of Driving analysis, was multiplied by the total number of gallons of fuel consumed. Table 4-1 presents the total cost of fuel associated with the alternatives.

Value of Vehicle Hours Traveled

The calculation for the value of vehicle hours traveled (VHT) considers the variations in VHT produced by development of the proposed alternatives combined with an estimate regarding the value of time. Much like the calculation of fuel cost, a total VHT figure for year 2035 was taken from the SMC Model (MPO, 2011). The VMT total was then combined with an estimate for the value of time. The value of time estimate was taken from a recent study completed by the FDOT in 2011 on I-95 in Miami, Florida. The study surveyed drivers to estimate the value of time, and set the per hour average at $32.00 dollars. **Table 4-4** presents the total annual VMT that would occur within Manatee County in year 2035.

TABLE 4-4
2035 VHT

Alternative	2035 VHT
No-Build	736,049
Fort Hamer	730,046
Rye Road	729,202

Source: SMC Model 2035 VHT (MPO, 2011).

The VHT figures listed in Table 4-4 were then multiplied by the $32.00 hourly rate. The results are listed in **Table 4-5**. Table 4-1 presents the difference between the No-Build Alternative and the two build alternatives.

TABLE 4-5
ANNUAL VALUE OF VHT

Alternative	2035 VHT Value
No-Build	$23,553,568
Fort Hamer	$23,361,472
Rye Road	$23,334,464

Sources: MPO, 2011. CUTR, 2011.

Summary of Economic Effects

No-Build Alternative

In development of the economic analysis, the potential economic effect associated with the No-Build Alternative is considered to be the likely future condition in the absence of the proposed improvements, and serves as the base-line figure to which the economic impact of the build alternatives may be compared.

As highlighted in Table 4-1 the No-Build Alternative would result in none of the costs associated with the development of a new bridge. Similarly, the No-Build Alternative would not result in any improvement in mobility or access, resulting in some instances in higher fuel and travel time costs within the project area.

Fort Hamer Alternative

As stated previously, the implementation of the Fort Hamer Alternative would not likely affect the location or intensity of long-term employment within Manatee County. However, based on the VMT and VHT figures produced by the SMC Model (Sarasota/Manatee MPO, 2011) the Fort Hamer Alternative would reduce both fuel consumption and travel time.

The Fort Hamer Alternative would cost an estimated $23.9 million to construct (including bridge maintenance, ROW, and roadway costs), and would result in the potential loss of less than $1,000 in annual tax revenue.

The immediate short-term economic benefit resulting from construction expenditures would likely include the creation of 295 to 403 jobs with an associated payroll of $12.01 – $16.53 million dollars. Additionally, based on the results of the SMC Model (Sarasota/Manatee MPO, 2011), the travel behavior associated with the development of the Fort Hamer Alternative would reduce total VMT by 97,776 annually with a related fuel costs savings of $16,466 annually. Finally, the Fort Hamer Alternative would reduce the total VHT by more than 6,000 hours annually with an associated annual savings of $192,096.

Rye Road Alternative

The implementation of the Rye Road Alternative would not likely affect the location or intensity of long-term employment within Manatee County. Based on VHT figures produced by the SMC Model, the Rye Road Alternative would reduce overall travel time within the County.

The Rye Road Alternative would cost an estimated $112.86 million to construct (including bridge maintenance, ROW, and roadway costs) and would result in the potential loss of $235,727 in annual tax revenue. Additionally, based on the results of the SMC TDM (Sarasota/Manatee MPO, 2011), the travel behavior associated with the development of the Rye Road Alternative would increase total VMT by 53,052 miles annually with a related annual fuel costs increase of $8,934.

The immediate short-term economic benefit resulting from construction expenditures would likely include the creation of 673 to 921 jobs with an associated payroll of $27.56 to $37.71 million dollars. Finally, the Rye Road Alternative would reduce the total VHT by more than 6,847 hours annually with an associated annual savings of $219,104.

4.1.2 LAND USE CHARACTERISTICS

4.1.2.1 Existing Land Uses

This section of the document provides an examination of the potential effect of the No-Build Alternative, Fort Hamer Alternative, and Rye Road Alternative on existing land uses.

The discussion of land use impact focuses on both direct and indirect effects. Council on Environmental Quality (CEQ) Regulation 1508, describes direct effects as those that "are caused

by the action and occur at the same time and place." Direct effects to land use resulting from transportation projects typically center on the effects of ROW expansion. CEQ Regulation 1508 goes on to define indirect effects as those that are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." Typically, indirect land use effects resultant from a transportation project include changes in the pattern or rate of development.

No-Build Alternative

Under the No-Build Alternative, the Proposed Action would not be consistent with the Manatee County Comprehensive Plan (Manatee County, 2010) or the Sarasota/Manatee MPO's 2035 LRTP (Sarasota/Manatee MPO, 2012) as roadway capacity crossing the Manatee River in the project area would remain unchanged.

The No-Build Alternative is expected to result in no takings and, thus would have no direct effect on land use. Based on the relative uniformity in the type and pattern of existing development shown to be both north and south of the Manatee River, the provision of no additional capacity crossing the river would likely have no effect on existing development patterns. Finally, the trend in development in the project area has been sustained for nearly a decade in the absence of an additional water crossing. It is not likely that the No-Build Alternative would alter this trend.

Fort Hamer Alternative

Similar to the No-Build Alternative, the Fort Hamer Alternative would result in no residential or commercial relocations. Most ROW expansion associated with the Fort Hamer Alternative would occur within dedicated easements or on public land. South of the Manatee River, the project would pass just east of the Waterlefe subdivision along a transportation easement established to support the landing of a future bridge. North of the river, the new alignment would pass through an area of publicly-owned land that would soon support a regional park (Hidden Harbour). Preliminary design of the planned park incorporates the proposed bridge into the final park design. The partial takings associate with the Fort Hamer Alternative would occur near the new alignment's tie-in with Upper Manatee River Road. The takings would occur in an area of residential use and are not anticipated to displace current use on the property. Overall, the direct impact associated with the Fort Hamer Alternative is not anticipated to significantly alter land use present in the project area.

As noted previously in Section 3.1.2, much of the open/agricultural land previously found in the area of the Fort Hamer Alternative now exists as residential development with large portions of the remaining undeveloped areas planned to support additional low-density suburban use. The project would likely, through improved river crossing access, support the continued urbanization of the area. However, based on the scope of the project (the connection of two collector roads), the new facility would not likely alter the location or character of existing use. The likely resultant effects of the project are limited to potential effects on the rate of development. Improved river crossing access and the projected increase in traffic volume (identified in Section 3.1.3) have the potential to make the commercial property located at the intersection of Fort

Hamer Road/SR 64 and on US 301 near Parrish more attractive to near-term commercial development.

The Fort Hamer Bridge project is identified in and consistent with the Manatee County's Comprehensive Plan. Additionally, the project is listed as a Financially Feasible Project in the Sarasota/Manatee MPO's 2035 LRTP (MPO, 2012).

Rye Road Alternative

The Rye Road Alternative would result in four residential and no commercial relocations. The four residential relocations would occur at the north end of Fort Hamer Road in close proximity to the US 301 intersection. The affected residential parcels would be converted to use as ROW. In total, the Rye Road Alternative would result in the takings of approximately 48 acres of land along the 10.3 mile length of the alternative. The vast majority of the takings would occur as partial takes and not result in the displacement of the current use of the parcel. Much of the area impacted by the partial takes exists as residential, agricultural, and conservation lands. The low-density and large parcel sizes associated with the existing development in the area helps to reduce the effect of the partial takings on existing use. Though the Rye Road Alternative would have a direct effect on existing use, the effects would not likely alter the general land use or character now present in the project area.

The Rye Road Alternative would serve to expand the existing two-lane sections of Rye Road, Golf Course Road, and Fort Hamer Road to four lanes. The increased capacity provided within the Rye Road corridor would likely support the suburban development that is occurring in the study area. Similar to the condition expected to result from the Fort Hamer Alternative, as noted in the traffic analysis provided in Section 3.1.3, construction of the Rye Road Alternative would result in an increase in traffic along the Rye Road corridor. This increase in traffic may make the commercial property located along SR 64 and US 301 more attractive to development, thus accelerating the timing of development of these parcels.

The Rye Road Alternative is not consistent with the County's Comprehensive Plan (Manatee County, 2010) or the 2035 LRTP (Sarasota/Manatee MPO, 2012) as the project would provide additional capacity well east of the river crossing proposed in those plans.

4.1.2.2 Future Land Uses

This section provides an examination of the potential effect of the No-Build Alternative, Fort Hamer Alternative, and Rye Road Alternative on future land uses. Unlike the discussion provided in Section 4.1.2.1, the assessment of future land use focuses on the long-term effects of the project on the location, rate, and character of development in the project area.

No-Build Alternative

The No-Build Alternative is expected to provide no additional capacity in the project area and based on the limited scope, result in no direct effects.

Trends in housing development and population growth over the past decade (described in Section 3.1) occurred in the absence of an additional water crossing in the area of Fort Hamer Road or Rye Road. Based on the projected population growth in the project area (125 to 153 percent by year 2035) and in consideration of the resultant development pressures likely to be present, the absence of the improvement is not expected to limit new development. The No-Build Alternative is not likely to significantly affect future land use.

Fort Hamer Alternative

The Fort Hamer Alternative is not anticipated to result in any residential or commercial relocations, and has been developed in coordination with the planned County park north of the Manatee River and residential development south of the river. The Fort Hamer Alternative would pass through an area of Manatee County that falls within the defined Urban Services Boundary (**Figure 4-1**). The portion of the county within the Urban Services Boundary is intended to support future urban development. The Fort Hamer Alternative would introduce an urban typical section along the length of the corridor that would be supportive of the planned urban character of the area.

As described in Section 3.1, much of the area along the Fort Hamer Alternative supports existing residential use or is planned to support a similar type of development. The rates of growth and general character of development both north and south of the Manatee River are similar. Based on existing trends, the river crossing access provided by the Fort Hamer Alternative would not likely induce additional growth or alter the character or rate of development.

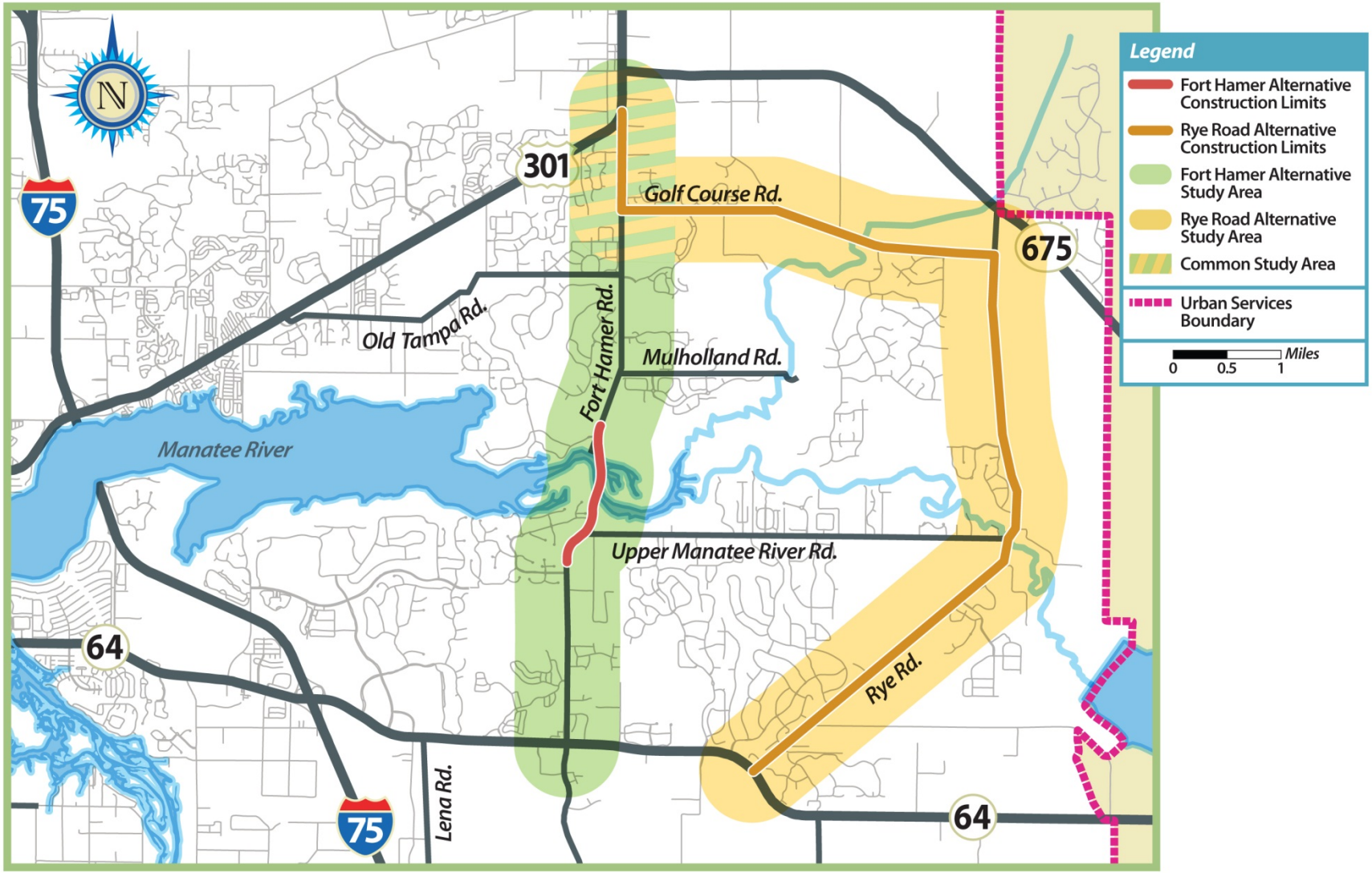
As stated in the previous section, the Fort Hamer Alternative is consistent with the Manatee County's Comprehensive Plan (Manatee County, 2010).

Rye Road Alternative

The Rye Road Alternative would result in four residential relocations and approximately 48 acres of partial takings. Though the planned future use in the area of the takings would be displaced, the large parcel size and current use would mitigate the effect on the character of the study area.

The Rye Road Alternative passes through a portion of Manatee County that falls within the Urban Services Boundary and is intended to support future urban development. The Rye Road Alternative would introduce an urban typical section to this area of the County, which would be supportive of the planned future use. The Rye Road Alternative would provide additional capacity along segments of existing roadways and serve to widen an existing crossing of the Manatee River. As shown through the presence of multiple planned developments (described in Section 3.1), pressure for development along the Rye Road Alternative currently exists. Additionally, population projections within the project area suggest development would continue at a rapid rate. The additional capacity provided along the Rye Road corridor would not likely significantly affect the demand for development.

FIGURE 4-1
LOCATION OF THE URBAN SERVICES BOUNDARY IN RELATION TO THE BUILD ALTERNATIVES



Source: Manatee County, 2012g.

As stated in the previous section, the Rye Road Alternative is not identified in the Manatee County's Comprehensive Plan (Manatee County, 2010). The development of this alternative would provide the additional river crossing approximately 4 miles east of the crossing proposed in the adopted land use plan.

4.1.3 TRAFFIC

This section summarizes traffic volumes, capacities, and levels of service (LOS) for the No-Build Alternative, Fort Hamer Alternative, and Rye Road Alternative for the years 2015 and 2035. **Table 4-6** summarizes the annual average daily traffic (AADT) volumes, roadway capacities, and LOS for the Fort Hamer Alternative and Rye Road Alternative. See Table 3-9 in Section 3.1.3 of this Final Environmental Impact Statement (FEIS) for the No-Build Alternative AADT volumes, roadway capacities, and LOS. Appendix B of this FEIS documents all the alternatives in detail.

Manatee County has adopted LOS D as its standard (Manatee County, 2010). As seen in Table 4-6, most of the roadways in the project area are anticipated to operate at acceptable LOS by 2015, with the exception of Upper Manatee River Road and I-75, which are deficient under both alternatives. By 2035, the Fort Hamer Alternative is anticipated to operate at LOS F.

The HEVAL (Highway Evaluation) module was run for Manatee County using the SMC model for each alternative (MPO, 2011). HEVAL is a component of the Florida Standard Urban Transportation Modeling System (FSUTMS)/Cube model that takes a specific study area or region and evaluates the results of the highway assignment for that particular area. The HEVAL calculates daily system performance measures such as daily VMT and daily VHT. Those alternatives with lower overall VMT and VHT are deemed superior to those with higher totals, since they result in lower fuel and operating costs with lower congestion. These measures reflect weekday conditions and provide a quantitative source for statistical comparison of the three alternatives for the year 2035 for the existing six lanes of I-75.

Figure 4-2 compares the projected 2035 daily VMT within Manatee County for the No-Build Alternative and the two build alternatives. The No-Build Alternative does not include any improvements to I-75, Fort Hamer Road, Upper Manatee River Road, Rye Road, and Golf Course Road. As Figure 4-2 illustrates, the Fort Hamer Alternative has the lowest VMT compared to the No-Build Alternative and Rye Road Alternative.

Figure 4-3 compares the projected 2035 daily VHT within Manatee County for the No-Build Alternative and the two build alternatives. As this figure illustrates, the Fort Hamer Alternative has the least amount of VHT.

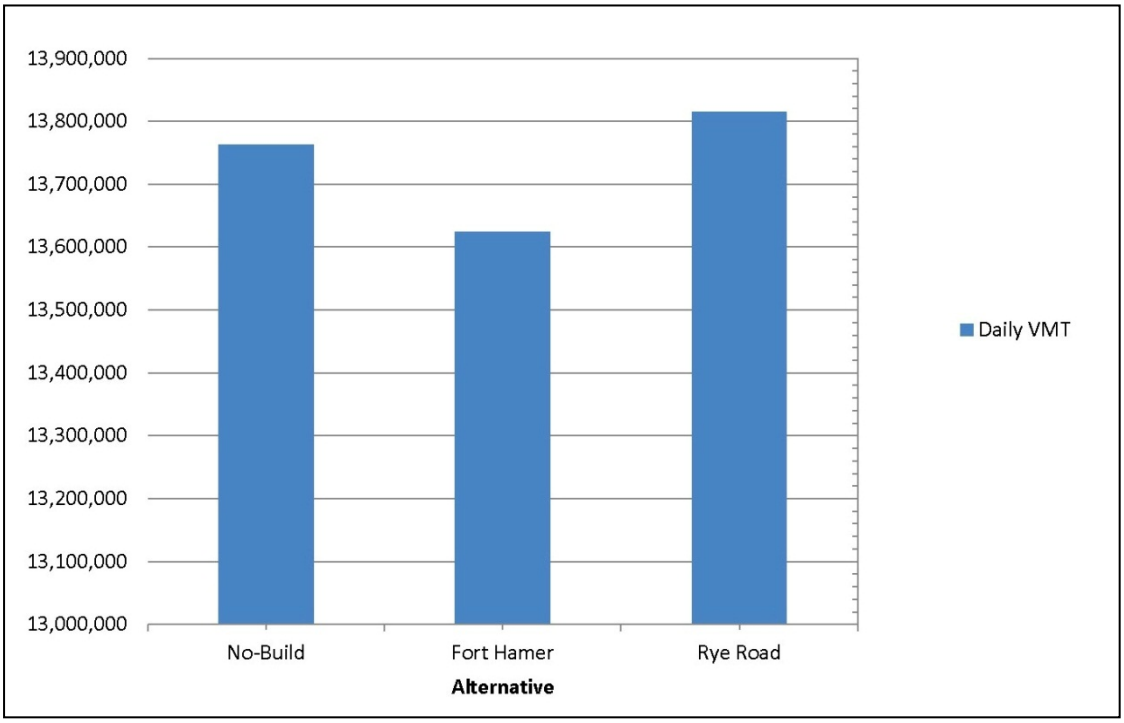
As seen in these figures, the Fort Hamer Road Alternative clearly yields the lowest VMT and VHT among of the three alternatives under consideration and, as such, ranks highest in terms of eliminating congestion and reducing fuel and operating costs.

TABLE 4-6
PROJECTED TRAFFIC CONDITIONS FOR BUILD ALTERNATIVES

Roadway	From/To	2011		2015						2035					
		No-Build Alternative		No-Build Alternative		Fort Hamer Alternative (Two-Lane)		Rye Road Alternative (Four-Lane)		No-Build Alternative		Fort Hamer Alternative (Two-Lane)		Rye Road Alternative (Four-Lane)	
		AADT Volume/ Capacity	LOS	AADT Volume/ Capacity	LOS	AADT Volume/ Capacity	LOS	AADT Volume/ Capacity	LOS	AADT Volume/ Capacity	LOS	AADT Volume/ Capacity	LOS	AADT Volume/ Capacity	LOS
Upper Manatee River Rd.	SR 64/Waterlefe Blvd	8,300/ 14,200	B	9,100/ 14,200	B	19,500/ 17,400[3]	F	5,300/ 14,200[2]	B	14,500/ 14,200	F	27,200/ 17,400[3]	F	14,500/ 14,200[2]	F
	Waterlefe Blvd./ Gates Creek Rd	5,500/ 14,200	B	5,900/ 14,200	B	17,400/ 17,400[3]	C	5,300/ 14,200[2]	B	9,800/ 14,200	D	25,100/ 17,400[3]	F	10,900/ 14,200[2]	B
	Gates Creek Rd./ Manatee River	N/A	N/A	--	--	17,400/ 17,400[3]	C	N/A	N/A	--	--	23,600/ 17,400[3]	F	N/A	N/A
Fort Hamer Rd.	Manatee River/ Mulholland Rd.	300 14,200	B	1,400/ 14,200	B	17,400/ 17,400[3]	C	800/ 14,200[2]	B	2,100/ 14,200	B	23,600/ 17,400[3]	F	2,100/ 14,200[2]	B
	Mulholland Rd./ Old Tampa Rd.	2,700/ 14,200	B	3,700/ 14,200	B	17,300/ 17,400[3]	C	3,700/ 14,200[2]	B	2,100/ 14,200	B	23,800/ 17,400[3]	F	3,300/ 14,200[2]	B
	Golf Course Rd./US 301	1,900/ 14,200	B	5,200/ 14,200	B	14,500/ 17,400[2]	B	10,200/ 17,400[3]	B	10,500/ 14,200	C	15,400/ 17,400[3]	B	21,200/ 39,400[4]	B
Rye Rd.	SR 64/Upper Manatee River Rd.	5,700/ 14,200	B	7,00/ 14,200	C	7,000/ 14,200[2]	B	14,000/ 17,400[3]	B	15,600/ 14,200	F	9,400/ 14,200[2]	B	23,200/ 39,400[4]	B
	Upper Manatee River Rd./Golf Course Rd.	2,800/ 14,200	B	2,900/ 14,200	B	2,900/ 14,200[2]	B	14,500/ 17,400[3]	B	19,800/ 14,200	F	6,500/ 14,200[2]	B	24,000/ 39,400[4]	B
Golf Course Rd.	Rye Rd./Fort Hamer Rd.	1,800/ 14,200	B	1,100/ 14,200	B	3,700/ 14,200[2]	B	9,800/ 17,400[3]	B	11,500/ 14,200	C	3,000/ 14,200[2]	B	22,900/ 39,400[4]	B
I-75[1]	SR 64/US 301	90,500/ 122,700	C	130,900/ 122,700	F	122,900/ 122,700[5]	F	126,600/ 122,700[5]	F	164,700/ 122,700	F	163,300/ 122,700[5]	F	165,200/ 122,700[5]	F

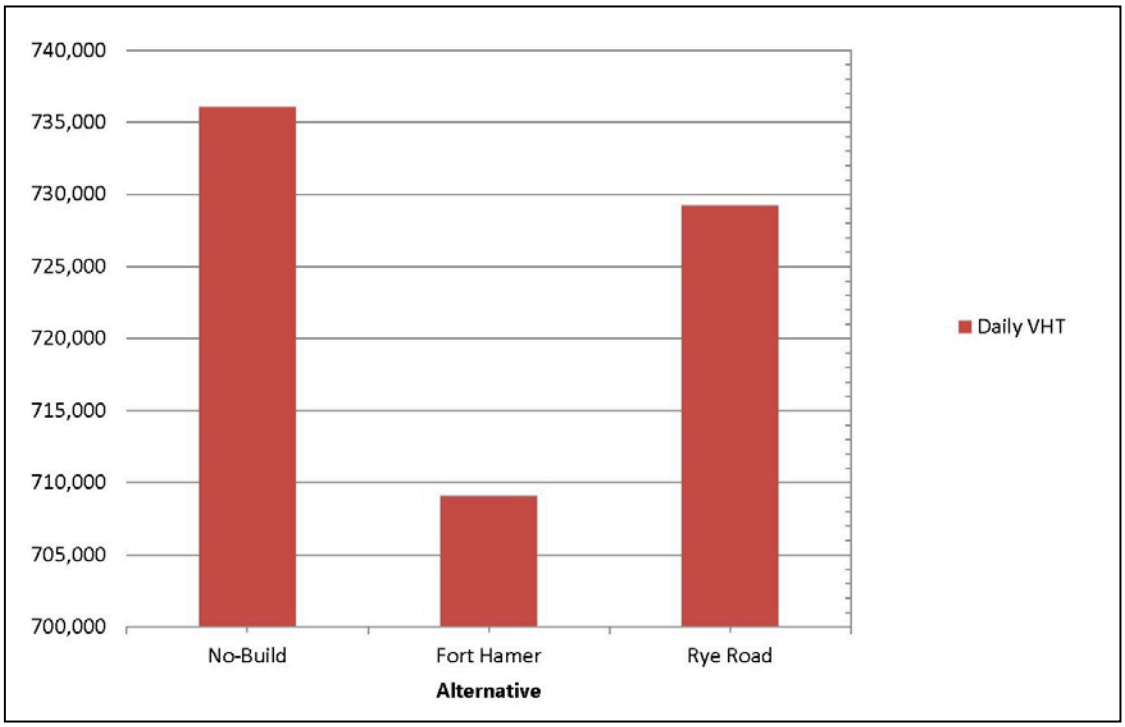
[1] I-75 is currently six lanes; an eight-lane design is approved but construction is unfunded.
[2] Capacities based on FDOT's ArtPlan Analysis for No-Build Geometry.
[3] Capacities based upon FDOT's ArtPlan Analysis for the Build Alternatives with interim turn lane and signal improvements.
[4] Capacities based upon FDOT's ArtPlan Analysis for the four-lane alternatives.
[5] Capacities – FDOT, 2010.

FIGURE 4-2
PROJECTED 2035 DAILY VMT WITHIN MANATEE COUNTY



Source: MPO, 2011.

FIGURE 4-3
PROJECTED 2035 DAILY VHT WITHIN MANATEE COUNTY



Source: MPO, 2011.

As seen in the latest travel demand model projections from the SMC Model (MPO, 2011), the projected vehicular demand in the project area justifies the construction of a new bridge crossing for the upper Manatee River. The results of the traffic demand model demonstrate that lanes across the river are justified. The results of the travel demand model also demonstrate that the Fort Hamer Alternative location provides the best alternative for a bridge crossing in terms of: 1) attracting the most trips, 2) diverting more traffic from I-75, and 3) resulting in lowest VMT and VHT. Widening I-75 alone or providing more lanes on Rye Road would not meet the future mobility needs of the residents of the project area.

No-Build Alternative

With the No-Build Alternative, I-75 from SR 64 to US 301 is predicted to operate at LOS F by 2015. By 2035, Upper Manatee River Road and Rye Road are anticipated to operate at LOS F. The No-Build Alternative has the greatest VMT (13,762,689 VMT) and the greatest VHT (729,202 VHT). Appendix B of this FEIS documents the traffic volumes and LOS in detail.

Fort Hamer Alternative

If the Fort Hamer Alternative constructs a two-lane bridge and improves the two-lane Upper Manatee River Road and Fort Hamer Road, the LOS is anticipated to operate at LOS D or better in the year 2015. The Fort Hamer Alternative has the least amount of VMT (13,664,913 VMT) compared with the No-Build Alternative and the Rye Road Alternative. The Fort Hamer Alternative VHT is improved from the No-Build Alternative. The Fort Hamer Alternative is documented in Appendix B.

Rye Road Alternative

If the Rye Road Alternative is improved as a four-lane arterial road, the LOS is anticipated to be LOS B or better on Rye Road, Golf Course Road, and Fort Hamer Road in the year 2035. In the year 2035, Upper Manatee River Road between SR 64 and Waterlefe Boulevard is anticipated to operate at LOS F without any road improvements. The Rye Road Alternative is anticipated to have the greatest VMT, when compared with the No-Build Alternative and the Fort Hamer Alternative. The VHT is 729,202 performing better than the No-Build Alternative. In the year 2035, the Rye Road Alternative has less VHT due to providing four through lanes anticipating to operate at LOS D or better. The Rye Road Alternative is documented in Appendix B.

4.1.4 COMMUNITY COHESION

As noted in Section 3.1.4, the topic of community cohesion centers on a discussion of the maintenance of existing communal bonds and social networks in the sustainment of a cohesive community. The differing potential effect of the proposed alternatives on community cohesion is described below.

No Build Alternative

Based on the absence of new barriers to interaction or the provision any additional capacity created by the No-Build Alternative, community cohesion would likely remain unaffected by this action.

Fort Hamer Alternative

The Fort Hamer Alternative has the greatest potential to improve community cohesion in the project area. The new river crossing provided by the Fort Hamer Alternative would serve to bridge a barrier to movement that limits the interaction of populations north and south of the Manatee River. The proposed bridge would, in some instances, greatly reduce the length of the trip required (a distance of up to 12 miles) to access the area at the southern end of Fort Hamer Road that is planned to support a new regional park and high school. In the future, the regional park would likely serve as an important community focal point attracting residents from the otherwise isolated residential developments. Finally, the bicycle and pedestrian facilities included as part of the alternative support an element of the public realm important in providing opportunity for face-to-face social interaction. This type of interpersonal interaction forms the basis of a cohesive community.

Potential detrimental effects associated with the development of the Fort Hamer Alternative are limited as the project would not serve to divide or isolate any existing neighborhoods or populations.

Rye Road Alternative

The Rye Road Alternative would serve to increase the roadway capacity from two to four lanes along three existing roadway segments. Additionally, the roadway would include bike lanes and sidewalks in areas now underserved by these types of facilities. Much like the Fort Hamer Alternative, provision of bicycle and pedestrian facilities along the length of the Rye Road Alternative would provide infrastructure elements supportive of face-to-face interaction, which would serve to benefit cohesion of the community. However, unlike the Fort Hamer Alternative, the Rye Road Alternative would result in the widening of the existing roadway. The resultant increased pedestrian crossing distance and increased speed of vehicles traveling along the corridor could potentially reduce safety and limit the attractiveness of the corridor to pedestrians and bicyclists (Tan, 2011). The expanded roadway may serve as a deterrent to travel and could create a barrier between developments.

Though the Rye Road Alternative has the potential to limit crossings by bicyclists and pedestrians, the proposed alignment would not breach the boundaries of any existing developments and would not serve to fragment existing populations. No specific population or neighborhood would become socially or culturally isolated as a result of construction and operation of the Rye Road Alternative.

4.1.5 RELOCATION POTENTIAL

Appendix I and Appendix J of this FEIS contain the Conceptual State Relocation Plan (CSRP) and Conceptual Plan Sheets for the build alternatives, respectively. These documents record the areas of planned ROW expansion, and make an assessment of the potential for the displacement of existing use.

No-Build Alternative

In the absence of any capacity or ROW expansion, the No-Build Alternative would have no potential for relocation.

Fort Hamer Alternative

The Fort Hamer Alternative would maintain a two-lane typical section along the length of the project. In the area of the bridge, the additional ROW needed would be supported within an area of publically-owned land north of the river and within a transportation easement south of the river. A partial take would occur near the Fort Hamer Alternative's tie-in with Upper Manatee River Road, but would not displace the use currently occupying the property. No total takings are anticipated to result from the Fort Hamer Alternative.

Construction of the Fort Hamer Alternative is not anticipated to result in the relocation of any use. See Appendix I for a detailed discussion of the relocation potential.

Rye Road Alternative

The Rye Road Alternative would require the widening of segments of Rye Road, Golf Course Road, and Fort Hamer Road. Approximately 48 acres of additional ROW would be needed to support the construction of the Rye Road Alternative. The majority of the expansion of the ROW would occur as partial takes and would not result in the displacement the use currently occupying the property. Four residential relocations would occur near the alternative's connection with US 301.

Construction of the Rye Road Alternative would result in four residential relocations. See Appendix I for a detailed discussion of the relocations. See Appendix J for a depiction of the affected properties.

4.1.6 COMMUNITY SERVICES AND FACILITIES

As part of this FEIS, an inventory of existing community facilities such as religious centers, schools, hospitals, fire stations, and police stations were identified. Features such as those listed serve a special importance within a community by functioning as a focal point for community activity and support. Potential impacts to community service facilities are described in the following sections.

4.1.6.1 Religious Centers

No-Build Alternative

The No-Build Alternative would implement only those improvements already funded by FDOT, the County, or non-governmental agencies, and would include no additional road capacity improvement. The limited action associated with the No-Build Alternative provides little potential for impact to the existing religious centers located in the project area.

Fort Hamer Alternative

The Christ Presbyterian Church is located on the east side of Upper Manatee River Road approximately 0.5 mile north of the Upper Manatee River Road and SR 64 intersection (see **Figure 4-4**). The church structure is located at the rear of the property approximately 500 feet from the existing edge-of-pavement. A short segment of a right-turn lane providing access to the Gates Creek development exists near the entrance to the church. No left-turn lane is present on Upper Manatee River Road at the church entrance. The church hosts four services weekly, with two occurring Sunday mornings and two Wednesday evenings. Access to the Christ Presbyterian Church may be affected by the increase in traffic along Upper Manatee River Road. However, the schedule of church events does not coincide with peak traffic periods.

As identified in Figure 4-4, three additional churches (First Baptist Church-Parrish, St. Frances X Cabrini Catholic Church, and Parrish United Methodist Church) are located north of the Fort Hamer Road/US 301 intersection just west of US 301. Access to these facilities is not anticipated to be negatively affected by the Proposed Action.

Rye Road Alternative

The services associated with the Garden Community Church are hosted at Gene Witt Elementary School located west of Rye Road approximately 1.5 miles north of the Rye Road/SR 64 intersection. The expansion of Rye Road at that site would occur to the east of the roadway, thus having no physical impact on the school or church. Based on coordination of use of the school facilities by the church, most scheduled church activity times fall outside of peak traffic periods. Access to the Gene Witt Elementary School may be affected by the increase in traffic along Rye Road. However, the schedule of church events does not typically coincide with peak traffic periods, thus reducing the impact to church operations.

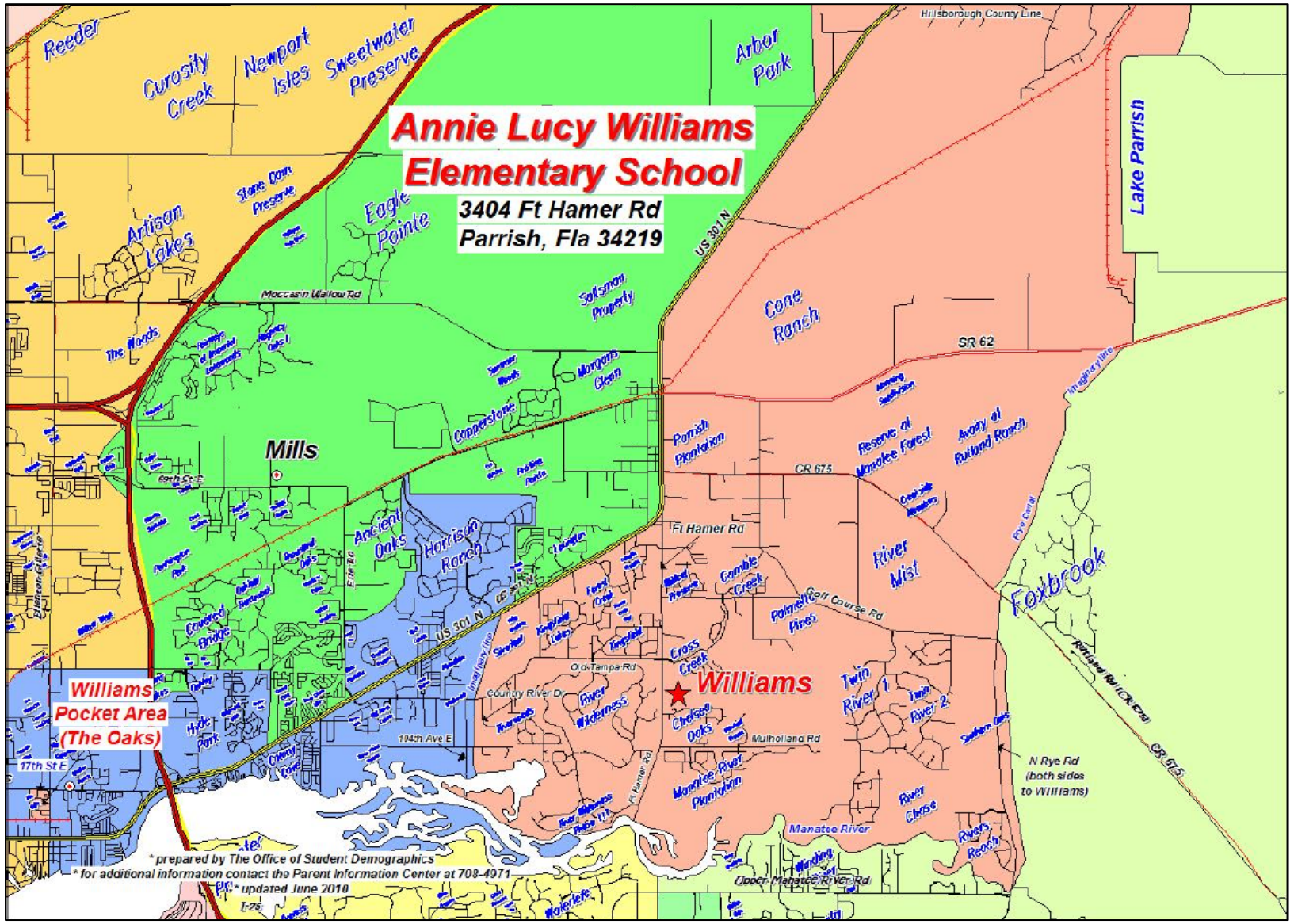
4.1.6.2 Schools

Section 3.1 identifies two schools within the study areas. Annie Lucy Williams Elementary School, located within the Fort Hamer Alternative Study Area, serves an area of the County north of the Manatee River, generally east of US 301 and west of Rye Road. Gene Witt Elementary School is located within the Rye Road Alternative Study Area and services a district that incorporates much of northeast Manatee County. The school's district is generally located north of SR 64 and east of Rye Road. See **Figures 4-5 and 4-6** for a depiction of the area served by the Annie Lucy Williams Elementary School and Gene Witt Elementary School, respectively.

FIGURE 4-4
COMMUNITY SERVICE FACILITIES WITHIN THE STUDY AREAS

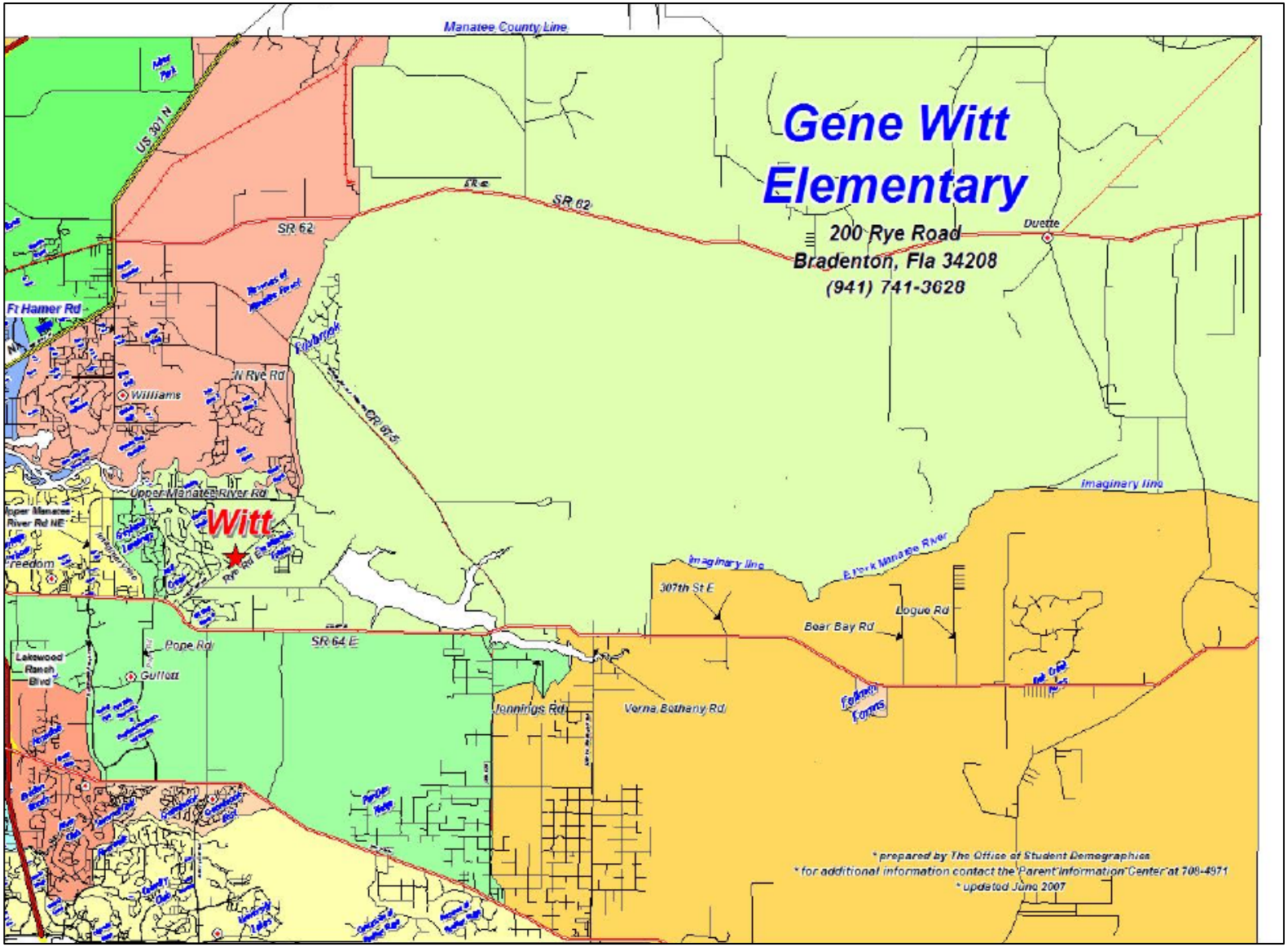
Sources: Manatee County, 2012c. University of Florida, 2009a.

FIGURE 4-5
ANNIE LUCY WILLIAMS ELEMENTARY SCHOOL SERVICE AREA



Source: Manatee County School District, 2013.

FIGURE 4-6
GENE WITT ELEMENTARY SCHOOL SERVICE AREA



Source: Manatee County School District, 2013

No-Build Alternative

In the absence of any capacity or ROW expansion, the No-Build Alternative would have no impact on schools.

Fort Hamer Alternative

The Annie Lucy Williams Elementary School is located on Fort Hamer Road between Old Tampa Road and Mulholland Road approximately 0.5 mile north of Fort Hamer County Park. The school buildings are located approximately 450 feet east of the existing edge-of-pavement on Fort Hamer Road. An open swale, multi-use trail, parking lot, and round-about pick-up area separate the school from Fort Hamer Road. All outdoor recreation areas associated with the school are located to the rear of the buildings, away from the roadway.

The existing two-lane typical section with dedicated left-turn lanes would remain unaltered in the area of the school. No direct impacts to the school facilities are anticipated to result from the construction of the Fort Hamer Alternative. Based on the location of the school in relation to the area supported, no improvement in district access is expected to result from the construction of the proposed bridge.

SMC Model results (Sarasota/Manatee MPO, 2011) for the Year 2035 Cost Feasible Plan with the Fort Hamer Alternative included show that traffic volumes on Fort Hamer Road/Upper Manatee River Road are projected to increase from an AADT volume of 300 vehicles in year 2011 to 17,300 vehicles in 2015 (opening year of the bridge). The rapid increase in traffic is the result of the creation of a new thoroughfare connecting SR 64 with US 301. Section 4.1.3 notes that many of the trips projected to travel along the new Fort Hamer Alternative now make the river crossing via I-75. The increase in traffic on Fort Hamer Road may increase congestion in the vicinity of the school during times of student drop-off and pick-up. The increased traffic volume on Fort Hamer Road may limit the ability of pedestrians and bicyclists to cross Fort Hamer Road to access the school. Additionally, vehicular traffic on Fort Hamer Road may experience delays in exiting from the school and to making a left turn to access the school from southbound on Fort Hamer Road.

As summarized in Table 2-10, the current Manatee County Capital Improvement Program has projects either under design and /or construction along Fort Hamer Road in the vicinity of Annie Lucy Williams Elementary School. These projects include continuous sidewalks, roadway widening, shoulder improvements, and right/left turn lanes. Standard safety measures, such as reduced traffic speeds in the school zone and crossing guards, may serve to reduce the negative effects produced by the increase in traffic.

Rye Road Alternative

The Gene Witt Elementary School is located on the west side of Rye Road approximately 1.5 miles north of the Rye Road/SR 64 intersection. The school buildings are located approximately 160 feet west of the existing edge-of-pavement on Rye Road. An open swale, sidewalk, and

parking lot separate the school from Rye Road. A fenced playground associated with the school is located in front of the school, approximately 145 feet from the existing edge-of-pavement.

One travel lane in each direction and left-turn lanes would be added to this portion of Rye Road as part of this alternative. Additional ROW would be incorporated along the east side of Rye Road to support the roadway expansion. The school property would not be directly impacted by the Rye Road Alternative.

SMC Model results (Sarasota/Manatee MPO, 2011) for the Year 2035 Cost Feasible Plan with the Rye Road Alternative included shows that traffic volumes on Rye Road are projected to increase from an AADT of 5,700 vehicles in year 2011 to 14,000 vehicles in 2015 (opening year of the bridge). The rapid increase in traffic is the result of the doubling of capacity of Rye Road, Golf Course Road, and Fort Hamer Road between SR 64 and US 301. This increase in traffic along Rye Road may limit accessibility to/from the school and may limit the ability of pedestrians and bicyclists to cross Rye Road to access the school. Additionally, vehicular traffic on Rye Road may experience delays in exiting from the school and making a left turn to access the school from northbound on Rye Road.

Standard safety measures, such as reduced traffic speeds in the school zone and crossing guards, may serve to reduce the negative effects produced by the increase in traffic.

4.1.6.3 Parks and Recreation Areas

No-Build Alternative

The No-Build Alternative would provide no capacity improvement within the area of the project. The limited action associated with the No-Build Alternative provides little potential for impact to the parks located in the project area.

Fort Hamer Alternative

The Fort Hamer County Park, planned Hidden Harbour Regional Park, and Manatee River Blueway Trail are located within the Fort Hamer Alternative Study Area (see **Figure 4-7**). Coordination between the roadway design team and Manatee County staff occurred during project development. The Fort Hamer Alternative would pass through a portion of the proposed Hidden Harbour Park; however, in coordination with the County, the layout of the future park has been developed to incorporate the proposed bridge. The existing Fort Hamer County Park (park and boat ramp) would not be directly impacted by the construction of the Fort Hamer Alternative. The Manatee River Blueway (kayak/canoe trail) follows the Manatee River through the area of the proposed Fort Hamer Bridge. No infrastructure associated with the Blueway Trail occurs within the Fort Hamer Alternative Study Area. The presence of a new bridge would not preclude the use of canoes and kayaks on the trail.

FIGURE 4-7
PARK AND RECREATION AREAS FACILITIES WITHIN THE STUDY AREAS

Source: Manatee County, 2012d.

The greatest potential benefit associated with the construction of the Fort Hamer Alternative centers on improved cross river access. The construction of a bridge to connect Upper Manatee River Road with Fort Hamer Road would provide a crossing more proximate to the location of the existing boat ramp and proposed regional park. The crossing would reduce the length of trip needed to access the recreation facilities located at the end of Fort Hamer Road by as much as 12 miles.

Overall, the Fort Hamer Alternative would likely have a beneficial impact on use of the existing Fort Hamer County Park and proposed Hidden Harbour Regional Park.

Rye Road Alternative

The Rye Preserve and the Manatee River Blueway Trail are present along the Rye Road Alternative. The Rye Preserve, a publicly-owned park, is located at the Rye Road crossing of the Manatee River. The proposed expansion of Rye Road at the Manatee River would require the taking of land within the preserve. Conceptual designs place the proposed additional bridge structure west of the existing Rye Road Bridge. This taking would occur to the west of Rye Road away from the main body of the preserve. The location and elevation of the proposed structure above the river would allow for the maintenance of a wildlife corridor within the floodplain that serves to connect the preserve to areas west of Rye Road. The Manatee River Blueway Trail passes through the Rye Road Alternative Study Area and includes a canoe/kayak launch just west of the existing Rye Road Bridge. Widening of the Rye Road Bridge with this alternative would not directly impact the canoe/kayak launch. The presence of a new bridge would not preclude the use of canoes and kayaks on the trail.

Based on the potential for direct impact, the Rye Road Alternative would likely have a minimally negative effect on the recreational resources located in the area of the alternative.

4.1.6.4 Public Facilities

No-Build Alternative

The No-Build Alternative would provide no capacity improvement within the area of the project. The limited action associated with the No-Build Alternative provides little potential for impact to the public facilities located in the project area.

Fort Hamer Alternative

One U.S. Post Office and the Parrish Fire Control District Fire Department are located on US 301 approximately 500 feet north of the intersection of Fort Hamer Road and US 301 (**Figure 4-8**). Preliminary design shows no direct impact to either facility resultant from the Fort Hamer Alternative. As discussed previously in Chapter 1, construction of a new bridge connecting Upper Manatee River Road with Fort Hamer Road would result in improved service and response times for emergency vehicles along the Fort Hamer Road/Upper Manatee River Road corridor, for both the Parrish Fire Control District Fire Department and the East Manatee Fire Rescue Station #3.

FIGURE 4-8
PUBLIC FACILITIES WITHIN THE STUDY AREAS

Sources: University of Florida, 2008 and 2009b.

Rye Road Alternative

The Rye Road Alternative passes within close proximity of one water pump station, two fire stations, and one US Post Office. A Manatee County Recycle Water facility is located on the northeast corner of the Rye Road/Waterline Road intersection. This facility serves as a major conduit for water transmission within the County and it is possible that a portion of this facility occurs within the construction footprint of the Rye Road Alternative. The potential for a direct impact to this facility exists. East Manatee Fire Rescue Station 3 is located on the west side of Rye Road approximately 1.5 miles north of the Rye Road/SR 64 intersection. The widening of Rye Road along this segment of the project corridor would occur to the east of the existing roadway and would not impact the fire station. The Parrish Fire Control District and U.S. Post Office are located on US 301 just north of the US 301/Fort Hamer Road intersection. No direct impacts to these facilities are anticipated as a result of construction and operation of the Rye Road Alternative. Emergency response times from both the East Manatee Fire Station #3 and the Parrish Fire Control Fire Department remain the same with no improvements.

4.1.6.5 Pedestrian/Bicycle Facilities

No-Build Alternative

There are currently no designated bicycle facilities along either the Fort Hamer Road or Rye Road corridors. The No-Build Alternative would provide no capacity improvement within the project area. The limited action associated with the No-Build Alternative provides little potential for impact to the pedestrian and bicycle facilities located in the project area.

Fort Hamer Alternative

As noted in Section 3.1.6.5, a fragmented sidewalk network and no bicycle lanes currently exist along the Upper Manatee River Road and Fort Hamer Road corridors. The improvements proposed as part of the Fort Hamer Alternative include both sidewalks and bicycle lanes. The sidewalks and bike lanes proposed as part of the project would serve to connect many of the networks now present within the existing residential neighborhoods located along the proposed alternative. Additionally, the proposed improvements would provide connection to the planned regional park and high school.

The Fort Hamer Alternative proposes a new river crossing at the southern terminus of Fort Hamer Road near the center of an approximately 13-mile stretch of the Manatee River that supports no pedestrian or bicycle crossing. Currently, the only existing sidewalk that crosses the Manatee River within Manatee County exists on the western span of the US 41 Bridge in Downtown Bradenton. The barrier to pedestrian and bicycle movement that is created by the river serves to separate the communities north and south of the Manatee River, and reduce the viability of walking and bicycles as a viable means of travel. The inclusion of a new river crossing at the Fort Hamer Alternative location would serve to greatly improve the bicycle and pedestrian network, and reduce the length of trip required for bicyclists/pedestrians moving north/south in Manatee County.

Rye Road Alternative

Similar to the Fort Hammer Alternative, a fragmented sidewalk network and no bicycle lanes currently exist along the Rye Road Alternative. The improvements proposed as part of the Rye Road Alternative would include both sidewalks and bicycle lanes. The sidewalks and bike lanes proposed as part of the project would serve to connect many of the networks now present within the existing residential neighborhoods located along the proposed alternative. Additionally, the proposed improvements would provide connection to the Rye Preserve.

The inclusion of the sidewalks and bicycle lanes along the Rye Road Alternative would serve to connect and improve the existing bicycle and pedestrian network present in Manatee County.

4.1.7 ENVIRONMENTAL JUSTICE

No Build Alternative

The No-Build Alternative would provide no capacity improvement within the project area. The limited action associated with the No-Build Alternative provides little potential for impact to low-income or minority populations.

Fort Hamer Alternative

As show in Section 3.1.7, when compared to the County average (12.8 percent), the Fort Hamer Alternative Study Area contains a relatively small economically disadvantaged population (2.2 to 11.4 percent). Additionally, as discussed in previous sections, the potential negative impacts related to the construction of the Fort Hamer Alternative (e.g., traffic congestion, takings, noise impacts) are spread relatively evenly along the project corridor. The presence of distributed impacts and smaller population relative to the County average allows for the reasonable determination that it is unlikely the negative effects of the project would fall disproportionately on a low-income group. As a result, the environmental justice policies protecting low-income groups need not be applied in development of the Fort Hamer Alternative.

The racial minority population within the area of the Fort Hamer Alternative (5.6 to 12.9 percent) does not exceed the County-wide average for the same group (18.1 percent). The presence of a small minority population and distributed project impacts allows for the reasonable determination that it is unlikely the negative effects of the project would fall disproportionately on a minority group. As a result, the environmental justice policies protecting racial minority groups need not be applied in development of the Fort Hamer Alternative.

The number of Hispanic (ethnic minority) persons residing within the area of the Fort Hamer Alternative exceeds the overall County average in one geographic area. The Hispanic population within Tract 001914 (24.1 percent) exceeds the population represented within the County overall (14.9 percent). Additionally, the population within Tract 001914 represents a proportion of the population that is in excess of 1.5 times the County average and is "meaningfully greater" than the County average. Though a minority community may be present in Tract 001914, the tract is located at the extreme periphery of the project area and is removed from the area of the

improvement. This distance makes it unlikely that Tract 001914 would bear a substantial portion of project effects. Additionally, it is not likely that the Hispanic population present in the tract would bear a disproportionate share of the negative effects resulting from the development of the Fort Hamer Alternative. Based on the foregoing, no disproportionate effects to low-income or minority populations are anticipated to result from the construction or operation of the Fort Hamer Alternative.

Rye Road Alternative

The population figures identified for the Rye Road Alternative are similar to those of the Fort Hamer Alternative. As discussed in Section 3.1.1, the area described for each alternative differs by a single U.S. Census Tract.

When compared to Manatee County averages for low-income, racial minority, and ethnic minority groups, the Rye Road Alternative passes through an area that is generally wealthier and less diverse than the County as a whole. In one instance, the Rye Road Alternative Study Area passes within a Census Tract that has a minority population greater than the County-wide average. As described in Section 3.1.7, Tract 001914 contains a population that is 24.1 percent Hispanic. Though this figure represents a population that meets the definition of "meaningfully greater" used in this study, the potential effects associated with the development of the Rye Road Alterative on the population contained in Tract 001914 are limited due to the distance of the population form the alternative.

Based on the foregoing, no disproportionate negative effects to low-income or minority populations are anticipated to result from the construction or operation of the Rye Road Alternative.

4.1.8 CONTROVERSY POTENTIAL

As mentioned previously in this FEIS, many public and agency comments have been received addressing the need for the project, water quality impacts, and quality of life issues. At this time, a resolution of these concerns has not been reached. However, the analysis of potential impacts detailed in this FEIS describes the efforts to identify, avoid, and minimize impacts to the greatest extent possible. Chapter 5 of this FEIS describes the study's ongoing public involvement process including all meetings, workshops, and the hearing conducted to help in the identification and resolution of issues and controversy.

Objections to a new bridge between Upper Manatee River Road and Fort Hamer Road or improving the capacity of Rye Road/Golf Course Road have largely been based in preserving the rural nature of the area. However, the existing and future land use information presented in this FEIS indicate that nearly all of the Fort Hamer Alternative and Rye Road Alternative study areas are zoned and planned as residential and would be converted to a suburban setting. These changes are to occur regardless of which alternative is selected or implemented.

4.1.9 UTILITIES AND RAILROADS

No rail lines exist within the project area; therefore, no railroads would be affected by either of the two build alternatives. Six utilities operate facilities that pass within the two build alternatives (Section 3.1.9). Requests for potential estimated relocation costs were made to the six utility providers; however, they require design-level plans to determine impacts to each of these utilities within the two build alternatives. Since design-level plans are not available, it is presumed that both build alternatives would result in the need to relocate these utilities to the edge of ROW; however, neither alternative is expected to result in the loss of or permanent impact to any utilities.

4.1.10 SUMMARY OF SOCIAL IMPACTS

Table 4-7 summarizes the potential social impacts associated with the No-Build Alternative and the two build alternatives.

TABLE 4-7
SOCIAL IMPACTS SUMMARY

Section	Issue	No-Build Alternative	Fort Hamer Alternative	Rye Road Alternative
4.1.1	Socioeconomic Conditions	No anticipated adverse impacts.	No anticipated adverse impacts. Proposed Action should benefit socioeconomic conditions in the project area.	No anticipated adverse impacts. Proposed Action should benefit socioeconomic conditions in the project area.
4.1.2	Land Use Characteristics (Existing and Future)	Inconsistent with Manatee County's 2020 Comprehensive Plan.	Minimal adverse impacts to existing and future land uses. Consistent with Manatee County's 2020 Comprehensive Plan future land use.	Minimal adverse impacts to existing and future land uses. Consistent with Manatee County's 2020 Comprehensive Plan future land use.
4.1.3	Traffic	74,200 AADT increase on I-75 from SR 64 to US 301 (2035) LOS F. County-wide increase in VMT and VHT.	18,900 AADT increase on Upper Manatee River Road from SR 64 to Waterlefe Boulevard (2035). 23,600 AADT crossing the Manatee River (2035). 21,200 AADT increase on Fort Hamer Road from Manatee River to US 301. 1,400 AADT decrease on I-75 from SR 64 to US 301 (2035). LOS F. County-wide reduction in VMT and VHT.	4,200 AADT increase on Rye Road from Upper Manatee River Road to Golf Course Road (2035). 500 AADT increase on I-75 from SR 64 to US 301 (2035). LOS F. Slight increase in County-wide VMT. Slight decrease in County-wide VHT.
4.1.4	Community Cohesion	No impacts.	No anticipated adverse impacts.	No anticipated adverse impacts.
4.1.5	Relocation Potential	No impacts.	No impacts.	Four residential locations affected.

Continued on next page

TABLE 4-7 (CONTINUED)
SOCIAL IMPACTS SUMMARY

Section	Issue	No-Build Alternative	Fort Hamer Alternative	Rye Road Alternative
4.1.6	Religious Centers	No impacts.	Traffic increase.	No anticipated adverse impacts.
	Schools	No impacts.	Traffic increase.	No anticipated adverse impacts.
	Parks and Recreation Areas	No impacts.	Traffic increase.	Traffic increase.
	Public Facilities	No impacts.	No anticipated adverse impacts. Improved emergency vehicle response times.	No anticipated adverse impacts.
	Pedestrian/ Bicycle Facilities	No sidewalks or bicycle lanes to be added.	Proposed Action would provide continuous bicycle lanes and sidewalks.	Proposed Action would provide continuous bicycle lanes and sidewalks.
4.1.7	Environmental Justice	No impacts.	No anticipated adverse impacts.	No anticipated adverse impacts.
4.1.8	Controversy Potential	Low	High	High
4.1.9	Utilities and Railroads	No impacts.	Six utility providers No railroads	Six utility providers No railroads

4.2 CULTURAL IMPACTS

Archaeological, historic, and tribal resources are all granted protection through the *National Historic Preservation Act* (NHPA). This Act establishes a specific process for the inventory, identification, classification, and documentation of the protected resources. Archaeological, historic, and tribal resources that are defined by the process as "eligible for listing on the National Register" must be avoided. If they cannot be avoided, impacts must be minimized and mitigation must be in place to the satisfaction of the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), and/or Advisory Council on Historic Preservation (ACHP). As detailed in this Section, U.S. Coast Guard (USCG) has consulted with the SHPO in accordance with NHPA.

As part of this FEIS, extensive research of available data concerning the history of Fort Hamer and Seminole emigration from this post was conducted in order to provide a thorough look in to the daily operations of the fort and its cultural and historical associations. This study was successful in documenting the history of Fort Hamer as an embarkation point for Seminoles deported to the Indian Territory in the west from 1849 to 1850 and identifying individual Seminoles who were deported from the post. In addition, further documentation included the establishment of the Fort, associated military personnel, and Fort Hamer's importance as a supply depot. Fort Hamer was constructed in 1849 and moved in 1850. A report titled "Documentation Concerning Second Seminole War Fort Hamer and the Seminole Deportation, Manatee County, Florida" was completed, and the USCG submitted the report to the SHPO and Seminole Tribe of Florida THPO in March 2013. The SHPO acknowledged receipt of the

"historical documentation that was completed at the request of the Seminole Tribe of Florida during consultation" on April 17, 2013 (see Appendix A-4).

FHWA Lead Efforts (1999–2007) – The SHPO was provided a copy of the original Cultural Resource Assessment Survey (CRAS) documenting the investigations conducted by ACI in the previous Federal Highway Administration (FHWA)/Florida Department of Transportation (FDOT) EIS efforts. In a letter dated November 1, 2001 from SHPO to FHWA (Appendix A-4), SHPO provided the following comment:

> *"Additional information about this project was provided during a meeting with Ms. Marion Almy and Ms. Joan Deming of Archaeological Consultants, Inc. Based on this supplemental historical and environmental information, it is the opinion of this office that the principal structures of Fort Hamer were not located within the area of potential effect for this project. Although the portion of the site 8MA315 that exists within the proposed right-of-way is indicative of nineteenth-century activity in the vicinity, it is characterized by a limited artifact assemblage, absence of intact cultural deposits, and lack of substantive research potential (FMSF Survey #5270). Therefore, it is the opinion of this office that the portion of site 8MA315 located within the proposed right-of-way is ineligible for listing in the National Register of Historic Places…"*

In January 2005, FDOT prepared a revised CRAS for FHWA and SHPO review. In correspondence to FHWA dated July 19, 2005, SHPO provided the following comments on the revised CRAS:

> *"The submitted CRAS included extensive documentary research concerning the history of Fort Hamer and the Seminole emigration from this post. This was conducted in order to provide a thorough examination into the daily operations of the fort and its cultural and historical associations. Through these means, this study was successful in documenting the history of Fort Hamer.*
>
> *Based on the information provided in the submitted CRAS, it is the opinion of the FHWA that the proposed undertaking will have no effect on any historic properties within the project APE listed, determined eligible, or potentially eligible for listing in the NRHP. Our office concurs with this determination and finds the submitted report complete and sufficient."*

A copy of the July 19, 2005 correspondence from SHPO to FHWA is provided in Appendix A-4. An archaeological and historical survey of the Rye Road Alternative was conducted in September/October 2006 and January 2007.

USCG Lead Efforts (2010–present) – A follow-up windshield survey was conducted in 2010-2011 to confirm whether all earlier identified resources were still extant and if there were additional historic resources (50 years in age or older) that needed to be recorded. These studies are summarized in the 2011 CRAS attached as Appendix C. In keeping with the results from the

earlier reports, the 2011 CRAS (Appendix C) concluded that there were no NRHP-listed or eligible resources in the project area of potential effect (APE). The SHPO concurred with these findings on February 6, 2013 and concluded Section 106 consultation in a letter date April 17, 2013 (Appendix A-4). Consultation with the Seminole Tribe of Florida is on-going.

4.2.1 ARCHAEOLOGICAL

No-Build Alternative

The No-Build Alternative would provide no capacity improvements within the project area. No impacts to archaeological resources are expected to result from the No-Build Alternative. However, future projects, both public and private, may involve earth disturbing activities. If such future projects arise, a new Cultural Resources Assessment Survey would be conducted to ascertain potential impacts to archaeological resources.

Fort Hamer Alternative

Background research, including a review of the Florida Master Site Files (FMSF), the National Register of Historic Places (NRHP), and a corridor analysis prepared by Archeological Consultants, Inc. (ACI) indicated that one historic archaeological site, the Fort Hamer Site (8MA315), was recorded within or adjacent to the Fort Hamer Alternative. According to the FMSF, the site was considered potentially eligible for listing in the NRHP.

As a result of field surveys, which included visual reconnaissance, systematic subsurface shovel testing, and use of a metal detector (within the area of 8MA315), no evidence of significant cultural resources, including Fort Hamer, was found. These results are in keeping with previous archaeological investigations conducted within that portion of the archaeological APE in the vicinity of where Fort Hamer was thought to have once been situated (Janus, 1998a and 1998b). As a result of Janus's 1998 efforts in the vicinity of Fort Hamer, the SHPO determined "that the portion of the Fort Hamer site within the project area is not eligible for listing in the NRHP (Percy, 1998). SHPO also concurred with ACI's findings (Matthews, 2001). As a result of these findings, the construction and operation of the Fort Hamer Alternative is not expected to adversely impact and archaeological sites.

Rye Road Alternative

In addition, review of the FMSF and the NRHP revealed that three archaeological sites were previously recorded within or adjacent to the Rye Road Alternative. These sites include the Rye Bridge Mound (8MA715), the Mitchellville Cemetery (8MA1343), and the Waters Edge Historic Scatter (8MA1344). None was considered eligible for listing in the NRHP by the SHPO. A review of relevant site locational information for environmentally similar areas in Manatee County and the surrounding region also indicated a variable potential for the occurrence of prehistoric sites within the project APE.

Also, intensive subsurface testing near 8MA715 produced no evidence of the Rye Bridge Mound within the Rye Road Alternative archaeological APE. The Mitchellville Cemetery is located west of Rye Road and is surrounded by a metal fence within the new River's Reach

development. No evidence of the cemetery was found within the Rye Road Alternative APE. There was also no additional evidence of 8MA1344 found east of Rye Road within the APE. As a result of these findings, the construction and operation of the Rye Road Alternative is not expected to adversely impact any archaeological sites.

4.2.2 HISTORICAL

No-Build Alternative

The No-Build Alternative would provide no capacity improvements within the project area; therefore, no impacts to historic resources are expected to result from the No-Build Alternative. However, future projects, both public and private, may involve direct or indirect impacts to current and future historic resources. If such projects arise, a new Cultural Resources Assessment Survey would be conducted to ascertain potential impacts to historic resources.

Fort Hamer Alternative

Background research, including a review of the FMSF and the NRHP, indicated that four historic properties (50 years of age or older) were previously recorded within the historical APE: 8MA763, 8MA1325, 8MA1326, and 8MA1468. These were recorded within the Fort Hamer Alternative. None was considered eligible for listing in the NRHP (Matthews, 2001; Gaske, 2004 and 2006). Therefore, the construction and operation of the Fort Hamer Alternative is not expected to adversely impact any historical sites.

Rye Road Alternative

The various historical surveys for this project resulted in the identification and recording of 18 additional historic resources, including one resource group (8MA1472), and 17 buildings (8MA1213-1226 and 8MA1474-1476). These buildings represent residential structures constructed in styles and forms common for the region. They are neither distinguished by their architectural features nor known to be associated with significant events or with the lives of persons significant in the past and do not form part of a historic district. SHPO also concurred that 8MA1213-1226 are not NRHP eligible (Matthews, 2001). In addition, the resource group, which includes the Palmetto Pines "White Course," lacks significant associations with respect to ownership, and alterations and additions have compromised its integrity. Also, many golf courses were constructed prior to this course in Manatee County. Therefore, the construction and operation of the Rye Road Alternative is not expected to adversely impact any historical sites.

4.2.3 SUMMARY OF CULTURAL RESOURCES IMPACTS

Table 4-8 summarizes the potential Cultural Resources Impacts associated with the No-Build Alternative and the two build alternatives.

TABLE 4-8
CULTURAL RESOURCES IMPACT SUMMARY

Section	Issue	No-Build Alternative	Fort Hamer Alternative	Rye Road Alternative
CULTURAL RESOURCES IMPACTS				
4.2.1	Archaeological	No impacts.	No adverse impacts. See SHPO concurrence letter in Appendix A-4.	No adverse impacts. See SHPO concurrence letter in Appendix A-4.
			Consultation with the Seminole Tribe of Florida is on-going. See SHPO concurrence letter in Appendix A-4.	
4.2.2	Historical	No impacts.	No adverse impacts.	No adverse impacts.

4.3 NATURAL ENVIRONMENT

4.3.1 LAND USE/VEGETATIVE COVER

No-Build Alternative

Implementation of the No-Build Alternative would not affect existing or future land use/vegetative cover within the project area. As previously stated in Section 3.3.1, the majority of existing uplands within the project area have already been developed into residential areas and golf courses, are in the process of being developed, or are approved for future development.

Fort Hamer Alternative

The Fort Hamer Alternative includes construction of a new two-lane bridge and connecting roadway segments in an area where these facilities do not currently exist. Undeveloped uplands directly affected by this alternative include approximately 19.4 acres of open land (former agriculture field) and 6.8 acres of forests, including live oaks, Brazilian pepper (*Schinus terebinthifolius*), and cabbage palm (*Sabal palmetto*). A description of the wetland impacts resulting from the Fort Hamer Alternative is provided in Section 4.3.2.

Rye Road Alternative

The Rye Road Alternative includes the widening of Rye Road (and bridge over the Manatee River), Golf Course Road (and bridge over Gamble Creek), and Fort Hamer Road from two to four lanes. Rye Road also crosses five small tributaries of Mill Creek between SR 64 and Upper Manatee River Road. Each of these crossings currently consists of box culverts or concrete pipe. With the Rye Road Alternative, these culverts and pipes would be extended to accommodate the four-lane condition. This widening would occur within or immediately adjacent to the existing ROW. Undeveloped uplands directly affected by implementation of this alternative include approximately 19 acres of agriculture (mostly pasture), 3.0 acres of open land, and 7.5 acres of forested uplands, including scrub and brushland and Brazilian pepper. A description of the wetland impacts resulting from the Rye Road Alternative is provided in Section 4.3.2.

4.3.2 WETLANDS

This section summarizes the unavoidable impacts to wetlands and other surface waters that would occur as a result of implementation of each alternative. A description of the potential surface water and wetland impacts resulting from each build alternative is provided in the Wetlands Evaluation Report (WER) in Appendix D of this FEIS. The WER is being reviewed by the U.S. Army Corps of Engineers (USACE) and National Marine Fishery Service (NMFS); both of these agencies will provide comments on the potential wetland impacts associated with each alternative.

4.3.2.1 Avoidance and Minimization

Pursuant to Executive Order 11990, *Protection of Wetlands*, federal actions should avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands and avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Unavoidable wetland impacts resulting from construction of the project would occur within each build alternative. Transportation safety standards for side slopes, turn radius, additional lanes, and widths necessitate these impacts. Impacts to wetlands are unavoidable for both the Fort Hamer Alternative and the Rye Road Alternative due to the presence of wetlands within the existing and proposed ROW and proximity to the bridge structures for each build alternative. However, potential wetland impacts would be minimized to the extent possible by incorporating the following measures:

- Within the Fort Hamer Alternative Study Area, construction of the new bridge would be at one of the narrowest places on the Manatee River. Both the eastern and western halves of the Fort Hamer Alternative Study Area include a widened floodplain, shallow embayments, and extensive salt marsh habitats. Spanning these wetlands would require longer bridge structures and would result in greater wetland impacts compared to the proposed crossing location.

- With the Fort Hamer Alternative, a temporary work trestle would be used to construct the bridge, which would minimize the permanent and temporary construction impacts. Use of a trestle would alleviate the need to construct a temporary causeway through the wetlands which would result in greater wetland impacts. The use of "top-down" construction is likely feasible; however, this methodology would require shorter span lengths and a greater number of pilings and pier support structures, which would increase permanent wetland impacts.

- For both build alternatives, no bridge abutments would be constructed in wetlands. Abutments on both the north and the south side of the river would be constructed in uplands.

- For both build alternatives, a stormwater management system would be constructed to meet state water quality criteria, thereby minimizing water quality impacts from stormwater discharges from roadway and bridge surfaces.

4.3.2.2 Analysis of Wetland Impacts

The potential wetland impacts for each build alternative were assessed by considering the type of facility to be constructed and the extent of the project footprint (i.e., construction limits) within the alternative. For the roadway segments, all wetlands and other surface waters within the proposed ROW were considered impacted since it is likely that the roadway surface, shoulders, sidewalks, and accompanying stormwater drainage and floodplain compensation facilities would occupy the full ROW.

Direct wetland impacts include fill and shading impacts. Fill impacts result from placement of bridge pilings and piers. Vegetated wetlands within the drip-line (i.e., edge-to-edge and abutment-to-abutment) of the bridges were considered impacts by shading.

Whenever a portion of a wetland is directly impacted by new construction, the SWFWMD requires an analysis of secondary impacts in the remaining portion of the wetland to account for reduced wildlife functions within the remaining wetland. Specifically, SWFWMD guidance requires that all remaining wetland areas within 25 feet of direct impacts in areas of new ROW are considered to have secondary impacts. Conversely, an analysis of secondary impacts is not required if the entire wetland is directly impacted because there is remaining wetland area in which secondary impacts could occur. Also, secondary impacts are not considered within existing ROW since these wetlands are already considered indirectly impacted (e.g., wetlands adjacent to an existing highway. For the Fort Hamer Alternative, secondary impacts were considered for wetlands adjacent to the new bridge and roadway construction since no infrastructure currently exists in these areas. In the DEIS, no secondary impacts were considered for the Rye Road Alternative since all direct impacts would occur in existing ROW adjacent to existing roadway and bridge structures.

In their comments on the DEIS, the USACE requested a 404(b)(1) analysis of the project alternatives, including secondary wetland impacts with varying buffer distances for both build alternatives. Section 4.3.2.6 has been added to this FEIS in response to this request.

4.3.2.3 Wetland Impacts

No-Build Alternative

With the No-Build Alternative, no additional travel lanes, roadway segments, or bridges would be constructed in the study areas other than those already programmed and not part of either build alternative. As such, no direct or indirect wetland impacts are expected to occur with the No-Build Alternative.

Fort Hamer Alternative

Table 4-9 summarizes the permanent wetland impacts resulting from the Fort Hamer Alternative. A total of 3.06 acres of wetlands would be directly impacted by the construction of this alternative; this includes 2.05 acres of dredge/fill impacts and 1.01 acres of shading impacts (2.05 +1.01 = 3.06). An additional 1.28 acres of wetlands are considered to have secondary impacts based on SWFWMD criteria. Thus, the Fort Hamer Alternative would result in 4.34

acres of permanent wetland impacts (3.06 + 1.28 = 4.34). All of these impacts would require compensatory mitigation.

TABLE 4-9
PERMANENT WETLAND IMPACT SUMMARY – FORT HAMER ALTERNATIVE

Wetland	FLUCFCS Classification[1]	FWS Classification[2]	Description	Direct Impact Acres		Secondary Impact Acres	Total Impact Acres
				Dredge/ Fill	Shading		
Wetland 1	617	PFO1C	Mixed Wetland Hardwoods	0.50	0.00	0.14	0.64
	631	PSS1C	Wetland Scrub	1.48	0.00	0.05	1.53
	Sub-total Wetland 1			**1.98**	**0.00**	**0.19**	**2.17**
Wetland 2	631	E2SS3A	Wetland Scrub	0.01	0.10	0.04	0.15
	642	E2EM1P	Saltmarsh	0.01	0.12	0.22	0.35
	Sub-total Wetland 2			**0.02**	**0.22**	**0.26**	**0.50**
Wetland 3	612	E2SS3N	Mangroves	0.01	0.05	0.05	0.11
	615	PFO1P	Stream & Lake Swamp (Bottomland)	0.01	0.21	0.22	0.44
	642	E2EM1N	Saltmarsh	0.03	0.50	0.51	1.04
	Sub-total Wetland 3			**0.05**	**0.76**	**0.78**	**1.59**
Wetland 4	642	E2EM1N	Saltmarsh	0.0003	0.03	0.06	0.09
	Sub-total Wetland 4			**0.0003**	**0.03**	**0.06**	**0.09**
			Total	**2.05**	**1.01**	**1.28**	**4.34**

[1] FDOT, 1999.
[2] Cowardin, *et al.,* 1979.
Totals may not add due to rounding.

Shading impacts from low bridges (i.e., bridges with a height to width ratio of less than 0.7) have been shown to result in decreased vegetative growth beneath the bridge (Broome *et al.*, 2005). Approximately 48 percent of the proposed Fort Hamer Alternative bridge would have a height-to-width ratio of 0.7, including the structure over the saltmarsh surrounding the peninsula between the north and south shorelines of the river. The remaining 52 percent of the bridge would have a height-to-width ratio between 0.4 and 0.7. The extent of wetland shading for the Fort Hamer Alternative bridge would be further reduced by the north/south orientation of the bridge, which allows more sunlight beneath the bridge in the early morning and late afternoon hours.

Sparse (less than 10 percent cover) patches of widgeon grass occur beneath the proposed Fort Hamer Alternative bridge, along the north bank of the main river channel adjacent to Wetland 3. Reduced productivity of the widgeon grass is possible in this area due to shading; however, the bridge structure would be approximately 32 feet above the water surface at this location. For this reason, and because of the north/south alignment of the structure, the total impact to widgeon grass as a result of shading is expected to be *de minimis*.

Temporary Impacts

It is anticipated that a temporary work trestle would be constructed across the Manatee River as part of this alternative. Design details of the trestle would be determined by the contractor (yet

to be selected); however, the typical section would be designed based on the weight bearing capacity needed to support the construction equipment. A similar structure used on a recent construction project consisted of a 28-foot-wide timber deck structure supported on steel pipe pilings and steel cross-beam supports. The trestle would be constructed adjacent and parallel to the permanent, two-lane bridge and would remain in place until construction of the bridge deck is completed.

A 28-foot-wide trestle would result in 0.62 acre of temporary shading impacts to vegetated wetlands and temporary *de minimis* fill impacts to wetlands and the open water portion of the Manatee River. It is anticipated that a temporary trestle would create the least amount of impacts to the mangroves, saltmarshes, and shallow portions of the Manatee River compared to other construction methodologies. Construction and use of the temporary trestle should result in insignificant, temporary wetland impacts that would restore naturally after the structure is removed.

Rye Road Alternative

Table 4-10 summarizes the permanent wetland impacts resulting from the Rye Road Alternative. A total of 2.52 acres of wetlands would be directly impacted by this alternative; this includes 2.51 acres of fill and 0.01 acre of shading impacts (2.51 + 0.01 = 2.52). As discussed previously, no secondary wetland impacts are considered for the Rye Road Alternative.

TABLE 4-10
PERMANENT WETLAND IMPACT SUMMARY – RYE ROAD ALTERNATIVE

Wetland[1]	FLUCFCS Classification[2]	FWS Classification[3]	Description	Direct Impact Acres		Total Impact Acres
				Fill	Shading	
Wetland 5	510	PUB2Jx	Stream (Channelized)	0.06	0.00	0.06
Wetland 6	618	PSS1C	Willow	0.19	0.00	0.19
Wetland 7	510	PUB2Jx	Stream (Channelized)	0.03	0.00	0.03
Wetland 8	510	PUB2Jx	Stream (Channelized)	0.08	0.00	0.08
Wetland 9	615	PFO1C	Stream Swamp (Bottomland)	0.07	0.00	0.07
Wetland 10	615	PFO1C	Stream Swamp (Bottomland)	0.60	0.01	0.61
Wetland 11	510/615	R2UB2/PFO1C	Stream and Stream Swamp (Bottomland)	0.20	0.00	0.20
Wetland 12	510/615	R2UB2/PFO1C	Stream and Stream Swamp (Bottomland)	0.40	0.00	0.40
Wetland 13	510/615	R2UB2/PFO1J	Stream and Stream Swamp (Bottomland)	0.22	0.00	0.22
Wetland 14	615	PFO1J	Stream Swamp (Bottomland)	0.14	0.00	0.14
Wetland 15	630	PFO1C	Wetland Forested Mixed	0.52	0.00	0.52
			Total	**2.51**	**0.01**	**2.52**

[1] See the WER in Appendix D for a description of each impacted wetland.
[2] FDOT, 1999.
[3] Cowardin, *et al.,* 1979.

4.3.2.4 Uniform Mitigation Assessment Method

Wetlands potentially impacted by the Fort Hamer and Rye Road Alternatives were assessed using the Uniform Mitigation Assessment Method (UMAM) pursuant to Chapter 62-345, Florida Administrative Code (F.A.C.). UMAM is a method developed by the Florida Department of Environmental Protection (FDEP) and the Water Management Districts to determine the amount of mitigation needed to offset adverse impacts to wetlands. The methodology was designed to assess functions provided by wetlands, the amount that those functions are reduced by a proposed impact, and the amount of mitigation necessary to offset the proposed functional losses. This method is also used to determine the degree of improvement in ecological value that would be created by mitigation activities. In Florida, the USACE also accepts UMAM for assessment of wetland impacts and mitigation, with some changes from the state implementation. Details of the UMAM calculations are provided in the WER in Appendix D of this FEIS.

Table 4-11 summarizes the wetland impacts and UMAM functional loss for each build alternative. The 4.34 acres of unavoidable wetland impacts for the Fort Hamer Alternative would result in a UMAM functional loss of 1.60.

TABLE 4-11
WETLAND IMPACTS AND UMAM FUNCTIONAL LOSS

Wetland	Fill/Shade		Secondary		Total	
	Acres	Functional Loss	Acres	Functional Loss	Acres	Functional Loss
Fort Hamer Alternative						
Wetland 1	1.98	1.16	0.19	0.005	2.17	1.16
Wetland 2	0.24	0.07	0.25	0.007	0.49	0.08
Wetland 3	0.81	0.32	0.78	0.03	1.59	0.34
Wetland 4	0.03	0.01	0.06	0.002	0.09	0.01
Totals (rounded)	**3.06**	**1.56**	**1.28**	**0.04**	**4.34**	**1.60**
Rye Road Alternative						
Wetland 5	0.06	0.01	No Secondary Impacts for Rye Road Alternative		0.06	0.01
Wetland 6	0.19	0.08			0.19	0.08
Wetland 7	0.03	0.01			0.03	0.01
Wetland 8	0.08	0.02			0.08	0.02
Wetland 9	0.07	0.02			0.07	0.02
Wetland 10	0.61	0.43			0.61	0.43
Wetland 11	0.20	0.06			0.20	0.06
Wetland 12	0.40	0.12			0.40	0.12
Wetland 13	0.22	0.06			0.21	0.06
Wetland 14	0.14	0.09			0.14	0.09
Wetland 15	0.52	0.38			0.52	0.38
Totals (rounded)	**2.52**	**1.28**			**2.52**	**1.28**

Note: Numbers may not add due to rounding.

The total area of the Rye Road Alternative requiring wetland mitigation is 2.52 acres. As shown in Table 4-11, these 2.52 acres of wetland impacts would result in a UMAM functional loss of 1.28.

4.3.2.5 Conceptual Wetland Mitigation

The term "mitigation" is widely used but is often the source of much confusion. For many resources, mitigation refers to an action or actions taken to reduce or prevent impacts prior to the impact occurring. For example, potential impacts to water quality of receiving streams as a result of stormwater runoff may be "mitigated" by the use of stormwater treatment ponds, which collect and treat the runoff prior to discharge to the receiving streams.

With respect to wetlands, actions taken to reduce or lessen impacts prior to the impact occurring are referred to as "minimization and avoidance measures" (see previous discussion in Section 4.3.1.1). All applicants for state and federal environmental permits authorizing wetland impacts must show the wetland minimization and avoidance measures for their proposed project. However, when wetland impacts are unavoidable and no practicable alternative exists, then the subsequent loss of wetlands and the ecological functions they perform must be replaced; this replacement is referred to by the regulatory agencies as "compensatory mitigation" [33 Code of Federal Regulations (CFR) Part 332], which is further defined as:

> *...the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.*

In 2008 the USACE and U.S. Environmental Protection Agency (EPA) issued regulations governing compensatory mitigation for activities authorized by the Department of the Army (Federal Register, 2008). These regulations, as promulgated in 33 CFR Part 332, establish a hierarchy for determining the type and location of compensatory mitigation. To briefly summarize, the rule establishes a preference for the use of mitigation bank credits if a mitigation bank has the appropriate number and resource type of credits available. If the permitted impacts are not in the service area of an approved mitigation bank, or if the appropriate number and resource type of credits are otherwise unavailable, then the rule establishes a preference for in-lieu fee program credits. If an approved mitigation bank or in-lieu fee program cannot be used to provide the required compensatory mitigation, the rule establishes a preference for permittee-responsible mitigation conducted under a watershed approach.

Both build alternatives would result in unavoidable wetland impacts to freshwater and/or estuarine wetland habitats. Regardless of the build alternative ultimately constructed, wetland impacts resulting from construction of the project are required to be mitigated to satisfy all mitigation requirements of United States Code (U.S.C.) 1344 and Part IV, Chapter 373 Florida Statutes (F.S.). The mitigation would need to be sufficient to offset the UMAM functional loss resulting from the wetland impacts and to offset the loss of value and functions resulting from impacts to EFH.

At present there are no permitted wetland mitigation banks or in-lieu fee programs serving the project area of either Build alternative. As a result, the DEIS was prepared under the premise that mitigation through the purchase of mitigation credits from a wetland mitigation bank or

participation in an in-lieu fee program was not available. Therefore, a conceptual mitigation plan consisting of the creation of wetland habitat on the north side of the river was developed and presented in the DEIS. This conceptual mitigation plan is presented as Wetland Mitigation Option 1 below.

After receiving the application for a 404 Dredge and Fill permit for the Fort Hamer Alternative, the USACE noted that the purchase of credits from the Tampa Bay Mitigation Bank (TBMB) might be appropriate even though the Fort Hamer Alternative is not within the service area of the bank. Specifically the USACE stated, "*Although your project is not within the service area of any Corps-approved mitigation banks, there is a bank in the vicinity of the project (Tampa Bay Mitigation Bank) that allows linear projects outside of the bank service area to use the bank"* (see letter dated February 25, 2014 in Appendix A). As a result, Wetland Mitigation Option 2 (described below) was developed for this FEIS.

DEIS Wetland Mitigation Strategy

Conceptual mitigation for either build alternative consists of the creation of multiple wetland habitats on the north and south sides of the river in the vicinity of the Fort Hamer Alternative. On the north side of the river, the mitigation area is located within a 229-acre vacant parcel of land known as the Hidden Harbour Tract. This site is located approximately 3,700 feet east of the Fort Hamer County Park (see Figure 9 of the WER in Appendix D of this FEIS). The area had been in agricultural cultivation until 2004 when it was purchased by Manatee County. The site has not been planted with row crops since the purchase, but is maintained by occasional mowing activities.

The area to be converted for wetland mitigation is currently fallow crop land that was previously used for growing tomatoes. Bed rows are still visible and dominated by cogon grass (*Imperata cylindrical*). Associate species observed in this area include saltbush, bushy broomsedge (*Andropogon glomeratus*), rattlebox (*Sesban* spp.), and docks (*Rumex* spp.).

In its current state, the proposed mitigation site provides little habitat for wildlife. Feral hogs were observed in the fallow crop land and several species of avian raptors were observed flying overhead; however, the fields do not provide the diversity of habitats preferred by most species. Once the proposed mitigation is constructed, a mosaic of habitats would be available for wading birds, amphibians, reptiles, and other wetland-dependent species.

Additional details of this wetland mitigation plan and UMAM functional gain resulting from the mitigation sites would be developed during the state and federal permitting process and would be subject to review and approval by the permitting and commenting agencies, including the USCG, USACE, NMFS, U.S. Fish and Wildlife Service (FWS), and SWFWMD. A summary of the conceptual mitigation for each build alternative under this strategy is provided below.

No-Build Alternative

In the absence of any direct or indirect impacts to wetlands, there is no conceptual wetland mitigation for the No-Build Alternative under this strategy.

Fort Hamer Alternative

The conceptual wetland mitigation for the Fort Hamer Alternative consists of three mitigation areas (Mitigation Areas A, B, and C – shown in Figure 9 of the WER in Appendix D). Mitigation Area A is located on the south side of the Manatee River immediately adjacent to Wetland 2 and east of the proposed roadway and bridge approach. The area to be converted for wetland mitigation is predominantly disturbed oak hammock dominated by live oak and Brazilian pepper. Mitigation activities to be performed in this area include creation of approximately 0.3 acre of tidal saltmarsh that is hydrologically connected to Wetland 2 and the Manatee River. The area would be excavated below the mean high water elevation and planted with black needle rush and leather fern.

Mitigation Area B is located in the Hidden Harbour site on the north side of the river. In Mitigation Area B, 0.2 acre of mangrove wetland and 1.8 acres of saltmarsh would be created by excavating uplands to approximately 1.5 feet below the mean high water elevation and hydrologically connecting it to the tidal portion of an unnamed tributary of Gamble Creek. Red and black mangroves would be planted in a zone between the tidal creek and saltmarsh. The saltmarsh portion of this wetland would be intertidal and planted with species adapted for oligohaline conditions, including black needlebrush and leather fern. The saltmarsh would also contain a sub-tidal pool, which would hold approximately 12 to 14 inches of water at low tide.

Mitigation Area C is also located in the Hidden Harbour site adjacent to Mitigation Area B. Mitigation Area C would consist of 2.2 acres of mixed, forested wetland hardwoods created by excavating uplands to 6 inches below the seasonal high groundwater elevation and hydrologically connecting it to upstream freshwater flow from an unnamed tributary of Gamble Creek. At seasonal high water, the mitigation area would hold approximately 6 inches of water. The mixed wetland hardwoods mitigation site would be planted with laurel oak, American elm, and red maple. A transitional boundary between uplands and wetlands would be planted with buttonbush, wax myrtle, and saltbush.

Rye Road Alternative

Mitigation activities at the Hidden Harbour site for the Rye Road Alternative include the construction of approximately 3.4 acres of mixed, forested wetland hardwoods at Mitigation Area C. The mixed wetland hardwoods would be created by excavating uplands to approximately 6 inches below the seasonal high groundwater elevation and hydrologically connecting it to upstream freshwater flow from the unnamed tributary of Gamble Creek. At seasonal high water, the mitigation area would hold approximately six inches of water. The mixed wetland hardwoods mitigation site would be planted with laurel oak, American elm, and red maple. A transitional boundary between uplands and wetlands would be planted with buttonbush, wax myrtle, and saltbush.

FEIS Wetland Mitigation Strategy

At the suggestion of the USACE in correspondence dated February 25, 2014 (see Appendix A-4), this strategy consists of the purchase of credits from a USACE- and SWFWMD-approved wetland mitigation bank.

No-Build Alternative

In the absence of any direct or indirect impacts to wetlands, there is no conceptual wetland mitigation for the No-Build Alternative under this option.

Fort Hamer Alternative

The conceptual wetland mitigation for the Fort Hamer Alternative consists of the purchase of credits from the TBMB. The TBMB is located approximately 12 miles north-northeast of the Fort Hamer Alternative in Hillsborough County and is approved by the USACE and SWFWMD to sell estuarine forested, tidal marsh, oligohaline marsh, freshwater marsh, and freshwater pond credits.

The TBMB does not have credits for freshwater forested wetlands. Since the Fort Hamer Alternative would impact approximately 1.08 acre of freshwater forested wetlands, this option would require the substitution of estuarine forested credits for the freshwater forested impacts. The substitution of "out-of-kind" credits would need to be approved by the USACE, FWS, NMFS, and SWFWMD during the permitting process. The amount of credits to be purchased under this option would be determined by the agencies during permitting.

Rye Road Alternative

The conceptual wetland mitigation for the Rye Road Alternative consists of the purchase of credits from the TBMB. The TBMB does not have credits for freshwater forested wetlands. The Rye Road Alternative would impact approximately 2.35 acres of freshwater forested wetlands; therefore, this option would require the substitution of estuarine forested credits for the freshwater forested wetland impacts. The substitution of "out-of-kind" credits would need to be approved by the USACE, FWS, NMFS, and SWFWMD during the permitting process. The amount of credits to be purchased under this option would be determined by the agencies during permitting.

4.3.2.6 Compliance with 404(b)(1) Guidelines

Pursuant to Section 404(b)(1) of the Clean Water Act (CWA), the USEPA has developed guidelines for the placement of dredged or fill material into waters of the U.S. Known as the "404(b)(1) Guidelines" they are binding regulations (40 CFR Part 230) and are the environmental standards for Section 404 permit issuance under the CWA. Under the Guidelines, the "least environmentally damaging practicable alternative" to the proposed discharge is the only alternative for which a Section 404 permit can be issued. The CWA prevents the USACE from authorizing impacts to waters of the U.S. if there is a less damaging practicable alternative.

The 404(b)(1) alternative analysis is a separate action from a NEPA alternative analysis. Unlike the 404(b)(1) analysis, the lead federal agency for a NEPA analysis is only required to *identify* its environmentally preferred alternative; it does not have to select the environmentally preferred alternative. However, the 404(b)(1) Guidelines require selection of the environmentally preferred alternative. The "least environmentally damaging practicable alternative" is, in part,

one that has the least adverse impact on the aquatic ecosystem and it must not have other significant adverse environmental consequences (40 CFR 230.10(a)).

In their comments on the DEIS, the USACE requested a 404(b)(1) analysis of the project alternatives, including identification of direct and secondary wetland impacts. For the secondary impacts the USACE requested an analysis with varying buffer distances for both the Fort Hamer and Rye Road alternatives. Based on this request, secondary impacts have been quantified at 25-foot, 50-foot, and 100-foot buffers. Although not directly impacted by dredge or fill activities, these buffer areas are considered impacted by noise, edge effects, and overall reduced value of ecological functions (i.e., secondary impacts) as a result of implementation of the alternative. The results of this analysis are provided in **Table 4-12** below.

TABLE 4-12
404(b)(1) ANALYSIS DIRECT AND SECONDARY WETLAND IMPACTS

Impact Type	Impact Acres	
	Fort Hamer Alternative	Rye Road Alternative
Direct		
Permanent Dredge/Fill	2.05	2.51
Permanent Shading	1.01	0.01
Secondary		
25-ft Buffer	1.28	4.48
50-ft Buffer	8.73	7.34
100-ft Buffer	10.75	14.40
Totals		
Direct + 25-ft Buffer Secondary	4.34	7.00
Direct + 50-ft Buffer Secondary	11.79	9.86
Direct + 100-ft Buffer Secondary	13.81	16.92

Please note that the selection of these buffers is a result of the 404 permitting process and should not be confused with the buffers used for the NEPA corridor analysis previously discussed in Section 2.3.2 and 2.3.3. Other environmental consequences resulting from the implementation of each build alternative are presented throughout this chapter (see Section 4.7 for a summary of these impacts). Based on the results of the environmental analysis presented in this chapter and the analysis of direct and secondary wetland impacts presented above, it is determined that the Fort Hamer Alternative represents the least environmentally damaging practicable alternative as defined by the 404(b)(1) Guidelines.

4.3.3 ESSENTIAL FISH HABITAT (EFH)

No-Build Alternative

With the No-Build Alternative, no roadway improvements or bridges would be constructed in the study areas other than those already programmed and not part of either build alternative. As such, no impacts to designated EFH are expected to result from the No-Build Alternative.

Fort Hamer Alternative

Wetlands 2, 3, 4, and the Manatee River within the Fort Hamer Alternative qualify as EFH. As shown in **Table 4-13**, implementation of the Fort Hamer Alternative would impact 0.16 acre of EFH due to fill and 1.01 acres of vegetated EFH due to shading. The shading impacts would not affect the hydrology of the affected wetlands but may result in a decrease of vegetation and secondary productivity beneath the bridge. As stated previously, approximately 48 percent of the structure would have a height-width ratio of 0.7 or greater, including that portion of the structure over the saltmarsh and mangroves in Wetland 3. The mid-point of the bridge, and consequently the highest part of the bridge, occurs over these marsh/mangrove habitats and allows stormwater to flow in equal volumes from the bridge to the stormwater ponds located at each end of the structure. Thus, 75 percent of the total permanent shading area (0.76 acre of the 1.01 acres) occurs beneath that portion of the bridge with a height-width ratio of 0.7 or greater. The remaining 25 percent of shading area (0.25 acre) occurs beneath portions of the bridge with a height-width ratio of less than 0.7.

TABLE 4-13
EFH IMPACT SUMMARY – FORT HAMER ALTERNATIVE

Wetland[1]	FLUCFCS Classification[2]	FWS Classification[3]	Description	Impact Type	Wetland Impact (Acres)
Wetland 2	631	E2SS3A	Wetland Scrub	Shading Fill	0.10 0.01
	642	E2EM1P	Saltmarsh	Shading Fill	0.12 0.01
				Sub-total Wetland 2	***0.24***
Wetland 3	612	E2SS3N	Mangroves	Shading Fill	0.05 0.01
	615	PF01P	Stream and Lake Swamp (Bottomland)	Shading Fill	0.21 0.1
	642	E2EM1N	Saltmarsh	Shading Fill	0.50 0.03
				Sub-total Wetland 3	***0.81***
Wetland 4	642	E2EM1N	Saltmarsh (Shoreline)	Shading Fill	0.03 0.0003
				Sub-total Wetland 4	***0.03***
River 1a	510	E1UB2L	Manatee River (Open Water)	Shading Fill	0.006 0.06
River 1b	510	E1UB2L	Manatee River (Open Water)	Fill	0.03
				Sub-total Rivers 1a and 1b	***0.15***
				Total Impacts	**1.23**

[1] See the WER in Appendix D for a description of each impacted wetland.
[2] FDOT, 1999.
[3] Cowardin, *et al.,* 1979.

Broome *et al.* (2005) reported that above-ground biomass, stem height, stem count, number of flowers, and basal area were greatly reduced beneath bridges at height-width ratios less than 0.5. At a height-width ratio of 0.68 adverse bridge shading effects on vegetation were still detected although greatly diminished. Likewise, they showed a strong correlation of bridge height-width ratio with secondary productivity with benthic invertebrate density and diversity significantly

lower beneath bridges with a height-width ratio less than 0.7. Broome *et al.* (2005) concluded: "Data indicates that shading by bridges having height-width ratios greater than 0.7 do not adversely impact the productivity or function of the underlying marsh…" Based on this analysis, the 0.25 acre of permanent shading area beneath the proposed bridge would be expected to result in reduced productivity and ecological function beneath the bridge. The remaining 0.76 acre of shading would have minimally reduced productivity and function. Shading impacts beneath the bridge may be further reduced due to the north-south orientation of the bridge; more sunlight will be present under the bridge during the morning and late afternoon hours compared to a bridge with an east-west axis. Based on this information, we conclude that the 1.01 acres of permanent shading beneath the bridge will have minimal adverse effects to red drum, gray snapper, pink shrimp, and stone crab populations and their prey species.

The temporary work trestle described previously would result in 0.62 acre of temporary shading impacts to wetlands. These impacts are expected to be minimal and should restore naturally following removal of the structure.

Water quality degradation could affect habitats designated as EFH within the Fort Hamer Alternative Study Area. To minimize potential water quality impacts, the project would be constructed in accordance with all permit conditions for maintaining water quality during construction and during operation of the facility. All stormwater runoff from the roadway and bridge structures would be directed to stormwater treatment ponds; no stormwater runoff would be directly discharged to the Manatee River or adjacent wetlands. For these reasons, no water quality induced adverse impacts to EFH or EFH-dependent species are anticipated for the Fort Hamer Alternative.

Rye Road Alternative

The Rye Road Alternative would not have fill or shading impacts to EFH; however, water quality degradation could affect downstream habitats designated as EFH. To minimize potential water quality impacts, this alternative would be constructed in accordance with all permit conditions for maintaining water quality during construction and during operation of the facility. All stormwater runoff from the roadway and bridge structures would be directed to stormwater treatment ponds; no stormwater runoff would be directly discharged to the Manatee River or adjacent wetlands. For these reasons, no water quality induced adverse impacts to EFH or EFH-dependent species are anticipated for the Rye Road Alternative.

4.3.4 WILDLIFE

No-Build Alternative

As previously described, conversion of forested uplands, agricultural areas, and other open spaces to an urban setting would occur within the project area, even with the No-Build Alternative. This loss of habitat is expected to result in a general decline in mammal and bird populations in the project area. Some bird species such as blue jays, house sparrows, and cardinals are well adapted to urban environments and local populations could actually increase with development. Wetland-dependent species such as wading birds, reptiles, and fish are not expected to be substantially affected by the No-Build Alternative since most of these habitats would remain unaffected by proposed future development. Planned and approved growth with

subsequent increases in traffic would result in an increased potential for road kill in the project area.

Fort Hamer Alternative

Implementation of the Fort Hamer Alternative would result in the conversion of approximately 19.4 acres of open land and 6.8 acres of upland forest to roadway and associated facilities. Loss of these habitats is expected to result in a general decline of mammal and bird populations in the Fort Hamer Alternative Study Area. Additional wetland/other surface water habitats would also be lost as a result of this alternative; however, the required compensation/wetland mitigation would supplant these lost habitats. Thus, the overall effect of the Fort Hamer Alternative on wetland-dependent species is expected to be minimal. The increase in traffic on Upper Manatee River Road and Fort Hamer Road as a result of this alternative would likely result in an increased potential for road kill on these roads.

Based on available information and field reviews, a bald eagle nest is located 0.52 mile west of the proposed bridge location. This nest was last documented as active by the Florida Fish and Wildlife Conservation Commission (FWC) in 2010. Due to the distance of this nest from the construction limits, construction of the Fort Hamer Alternative is not likely to affect the nesting behavior of eagles using this nest. Manatee County would resurvey the project area and review the most current FWC database for documented bald eagle nests prior to construction. If any bald eagle nests are observed or documented within or adjacent to the project area, Manatee County would coordinate with the FWS and FWC, as appropriate.

Rye Road Alternative

Implementation of the Rye Road Alternative would result in the conversion of approximately 19.0 acres of agriculture (mostly pasture), 3.0 acres of open land, and 7.5 acres of forested uplands to roadway and associated facilities. Loss of these habitats is expected to result in a general decline of mammal and bird populations in the Rye Road Alternative Study Area. Additional wetland/other surface water habitat would also be lost as a result of this alternative; however, the required compensating wetland mitigation would supplant these lost habitats. Thus, the overall effect of the Rye Road Alternative on wetland-dependent species is expected to be minimal. The widened roadway associated with this alternative would likely result in an increased potential for road kill on Rye Road, Golf Course Road, and Fort Hamer Road.

The existing Rye Road Bridge provides potential nesting habitat for bird species that are not listed as threatened or endangered, but are still afforded protection under the *Migratory Bird Treaty Act*, as amended (MBTA). Nesting birds and their nestlings are protected by the MBTA. Should the Rye Road Alternative be selected as the preferred alternative, prior to construction Manatee County would survey the existing bridge for evidence of migratory bird nests and, if present, would mitigate disturbance during construction by scheduling construction during a non-nesting time, or take other measures to prevent nests from being established until construction is complete.

4.3.5 THREATENED AND ENDANGERED SPECIES

This section summarizes the potential impacts to federal- and state-listed threatened and endangered species and their habitats that may result from each alternative. A description of the potential impacts to listed species or their habitats for each build alternative is provided in the Biological Assessment (BA) in Appendix E of this FEIS. **Tables 4-14 and 4-15** provide the effect determinations for the federally- and state-listed species for the Fort Hamer Alternative and the Rye Road Alternative, respectively.

TABLE 4-14
LISTED SPECIES EFFECT DETERMINATIONS FOR THE FORT HAMER ALTERNATIVE

Project Effect Determination	Federally-Listed Species
May affect, not likely to adversely affect	Smalltooth sawfish (*Pristis pectinata*) Eastern indigo snake (*Drymarchon corais couperi*) West Indian manatee (*Manatus trichechus*) and critical habitat Wood stork (*Mycteria americana*)
No effect	Florida goldenaster (*Chrysopsis floridana*) Florida scrub jay (*Aphelocoma coerulescens*) Florida grasshopper sparrow (*Ammodramus savannarum floridana*) Crested caracara (*Caracara cheriway*)
Project Effect Determination	**State-Listed Species**
May affect, not likely to adversely affect	Gopher tortoise (*Gopherus polyphemus*) Pine snake (*Pituophis melanoleucus mugitis*) Florida mouse (*Podomys floridanus*) Gopher frog (*Rana capito*)
No effect	**Plants** Golden leather fern (*Acrostichum aureum*) Many-flowered grass pink (*Calopogon multiflorus*) Florida goldenaster (*Chrysopsis floridana*) Sanibel lovegrass (*Eragrostis pectinacea* var. *tracyi*) Tampa vervain (*Glandularia [Verbena] tampensis*) Wild cotton (*Gossypium hirsutum*) Florida spiny-pod (*Matalea floridana*) Giant orchid (*Pteroglassaspis [Eulophia] ecristata*) Large-plumed beaksedge (*Rhynchospora megaplumosa*) **Animals** Limpkin (*Aramus guarauna*) Florida burrowing owl (*Athene cunicularia floridana*) Little blue heron (*Egretta caerula*) Reddish egret (*Egretta rufescens*) Snowy egret (*Egretta thula*) Tricolored heron (*Egretta tricolor*) White ibis (*Eudcimus albus*) Southeastern American kestrel (*Falco sparverius paulus*) Florida sandhill crane (*Grus canadensis pratenesis*) Brown pelican (*Pelecanus occidentalis*) Roseate spoonbill (*Platalea ajaja*) Mangrove rivulus (*Rivulus marmoratus*) Sherman's fox squirrel (*Sciurus niger shermanii*)

TABLE 4-15
LISTED SPECIES EFFECT DETERMINATIONS FOR THE RYE ROAD ALTERNATIVE

Project Effect Determination	Federally-Listed Species
May affect, not likely to adversely affect	Eastern indigo snake (*Drymarchon corais couperi*) Crested caracara (*Caracara cheriway*) West Indian manatee (*Manatus trichechus*) and critical habitat Florida scrub jay (*Aphelocoma coerulescens*) Wood stork (*Mycteria americana*)
No effect	Smalltooth sawfish (*Pristis pectinata*) Florida goldenaster (*Chrysopsis floridana*) Florida grasshopper sparrow (*Ammodramus savannarum floridana*)
Project Effect Determination	**State-Listed Species**
May affect, not likely to adversely affect	Gopher tortoise (*Gopherus polyphemus*) Pine snake (*Pituophis melanoleucus mugitis*) Florida mouse (*Podomys floridanus*) Gopher frog (*Rana capito*)
No effect	**Plants** Golden leather fern (*Acrostichum aureum*) Many-flowered grass pink (*Calopogon multiflorus*) Florida goldenaster (*Chrysopsis floridana*) Sanibel lovegrass (*Eragrostis pectinacea* var. *tracyi*) Tampa vervain (*Glandularia [Verbena] tampensis*) Wild cotton (*Gossypium hirsutum*) Florida spiny-pod (*Matalea floridana*) Giant orchid (*Pteroglassaspis [Eulophia] ecristata*) Large-plumed beaksedge (*Rhynchospora megaplumosa*) **Animals** Limpkin (*Aramus guarauna*) Florida burrowing owl (*Athene cunicularia floridana*) Little blue heron (*Egretta caerula*) Reddish egret (*Egretta rufescens*) Snowy egret (*Egretta thula*) Tricolored heron (*Egretta tricolor*) White ibis (*Eudcimus albus*) Southeastern American kestrel (*Falco sparverius paulus*) Florida sandhill crane (*Grus canadensis pratenesis*) Brown pelican (*Pelecanus occidentalis*) Roseate spoonbill (*Platalea ajaja*) Mangrove rivulus (*Rivulus marmoratus*) Sherman's fox squirrel (*Sciurus niger shermanii*)

4.3.5.1 Federally-Listed Species

No-Build Alternative

Conversion of forested uplands, agriculture areas, and other open spaces to an urban setting would occur throughout the project area, even with the No-Build Alternative. This loss of habitat is likely to result in general population declines of listed species that may be present in these habitats. For example, federally-listed species potentially found in these types of habitat include the eastern indigo snake, Florida scrub jay, and Florida goldenaster.

Habitat for wetland-dependent federally-listed species such as the West Indian manatee and wood stork is less likely to be affected by approved future development of the project area since most development would be restricted to uplands and stormwater treatment would be required in most instances. However, increased recreational boating (i.e., power boats) within the project area would increase potential collisions with manatees.

Fort Hamer Alternative

Potential impacts to federally-listed species or their habitats that could occur as a result of either build alternative were assessed. Based on the assessment, it was determined that the Fort Hamer Alternative would have "no effect" on the Florida goldenaster, Florida scrub jay, Florida grasshopper sparrow, and crested caracara and a "may affect, not likely to adversely affect" determination was made for the smalltooth sawfish, eastern indigo snake, wood stork, West Indian manatee, and designated critical habitat for the West Indian manatee. Manatee County will provide suitable foraging habitat (SFH) compensation within the core foraging area of affected colony sites equivalent to the impacts SFH in accordance with the *Word Stork Foraging Assessment Procedure* (FWS, 2010) and the FWS' *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (Ogden, 1990). FWS-approved construction precautions for the smalltooth sawfish, eastern indigo snake, and West Indian manatee would also be implemented during construction (see the BA in Appendix E for a copy of the construction precautions).

Rye Road Alternative

With the Rye Road Alternative, a "no effect" determination was made for the Florida goldenaster and Florida grasshopper sparrow and a "may affect, not likely to adversely affect" determination was made for the eastern indigo snake, crested caracara, Florida scrub jay, wood stork, West Indian manatee, and designated critical habitat for the West Indian manatee. To offset these potential effects, Manatee County has agreed to: (1) mitigate all wetland impacts that are suitable habitat for the American alligator and wood stork; (2) utilize FWS-approved construction precautions for the eastern indigo snake and West Indian manatee during construction; and (3) resurvey appropriate habitats in the alternative for crested caracara and Florida scrub jay nests prior to construction and to re-initiate consultation with the FWS, if needed.

4.3.5.2 State-Listed Species

No-Build Alternative

Similar to the discussion of general wildlife (Section 4.3.4) and federally-listed species (Section 4.3.5.1), conversion of remaining upland habitat to residential areas within the project area would occur, even with the No-Build Alternative. This development would result in less habitat availability and increased potential for road kill for state-listed species. Wetland-dependent state-listed species are less likely to be affected by approved future development of the project area since most development would be restricted to uplands and stormwater treatment would be required for most development.

Fort Hamer Alternative

Several state-listed species occur or have the potential to occur within the Fort Hamer Alternative Study Area (Table 3-19). Of these, implementation of the Fort Hamer Alternative results in a "may affect, not likely to adversely affect" determination for the gopher tortoise, pine snake, Florida mouse, and gopher frog. If the Fort Hamer Alternative is implemented, Manatee County would resurvey the construction footprint for the presence of gopher tortoise burrows prior to construction. If gopher tortoise or their burrows are found in or within 25 feet of the construction limits, Manatee County would coordinate with the FWC to secure permits needed to relocate the gopher tortoises and associated commensal species prior to construction.

Implementation of the Fort Hamer Alternative is expected to have "no effect" on all other state-listed species (Table 4-14). If the Fort Hamer Alternative is implemented, Manatee County would resurvey the construction limits for the presence of nesting osprey, Florida burrowing owl, and Florida sandhill crane. If any burrows or nests associated with these species are identified, Manatee County would coordinate appropriately with the FWC.

Rye Road Alternative

Several state-listed species occur or have the potential to occur within the Rye Road Alternative Study Area (Table 3-19). Of these, implementation of the Rye Road Alternative results in a "may affect, not likely to adversely affect" determination for the gopher tortoise, pine snake, Florida mouse, and gopher frog. If the Rye Road Alternative is implemented, Manatee County would resurvey the construction footprint for the presence of gopher tortoise burrows prior to construction. If gopher tortoise or their burrows are found in or within 25 feet of the construction limits, Manatee County would coordinate with the FWC to secure permits needed to relocate the gopher tortoises and associated commensal species prior to construction.

Implementation of the Rye Road Alternative is expected to have "no effect" on all other state-listed species (Table 4-15). If the Rye Road Alternative is implemented, Manatee County would resurvey the construction limits for the presence of nesting osprey, Florida burrowing owl, and Florida sandhill crane. If any burrows or nests associated with these species are identified, Manatee County would coordinate appropriately with the FWC.

4.3.5.3 Critical Habitat

No-Build Alternative

Implementation of the No-Build Alternative should not adversely affect designated critical habitat for the West Indian manatee in the Manatee River. There are no known plans for channel dredging of the river within the project area. All future developments within the project area would be required to provide stormwater treatment in accordance with state water quality criteria.

Fort Hamer Alternative

The Fort Hamer Alternative crosses a portion of the Manatee River designated as critical habitat for the West Indian manatee in 17 CFR 35.1532. Implementation of the Fort Hamer Alternative would have minor effects on widgeon grass, a potential food source for manatees in the river. Stormwater runoff from the new bridge and roadway segments would be directed to a stormwater treatment system pursuant to state requirements. For these reasons, implementation of the Fort Hamer Alternative "may affect, but is not likely to adversely affect" critical habitat for the West Indian manatee.

Rye Road Alternative

The Rye Road Alternative crosses a portion of the Manatee River designated as critical habitat for the West Indian manatee. Implementation of the Rye Road Alternative would not impact any food sources (i.e., seagrasses) for the manatee. Stormwater runoff from the bridge and additional travel lanes would be directed to a stormwater treatment system pursuant to state requirements. For these reasons, implementation of the Rye Road Alternative "may affect, but is not likely to adversely affect" critical habitat for the West Indian manatee.

4.3.5.4 Status of Agency Coordination

To ensure this *National Environmental Policy Act of 1969* (NEPA) review is in compliance with the *Fish and Wildlife Coordination Act* (16 U.S.C. 661-667e); the MBTA (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755); and the *Bald and Golden Eagle Protection Act* (16 U.S.C. 668-668d, 54 Stat. 250), coordination with the FWS is required. Coordination is also required with both the FWS and NMFS under Section 7 of the *Endangered Species Act of 1973*, as amended (ESA).

Agency coordination of the project was initiated on July 8, 2010 with the publication of the Notice of Intent (NOI) to prepare an EIS in the Federal Register (2010). On July 10, 2010 the USCG invited the FWS and NMFS to participate as cooperating agencies for the EIS. Both the FWS and NMFS declined to be a cooperating agency. The DEIS for the proposed action was released for public review on July 5, 2013. A copy of the BA was provided as Appendix E of the DEIS. On July 24, 2013 the USCG initiated consultation with the NMFS and FWS pursuant to Section 7 of the ESA.

On August 8, 2013 the NMFS responded with comments on the BA and requested additional information for NMFS' review, including a recommendation that an ESA Section 7 consultation on smalltooth sawfish be conducted. In an email dated August 29, 2013 the NMFS requested a modified consultation request that addresses the smalltooth sawfish. In emails dated August 27, 2013 the NMFS requested additional information regarding project-related impacts to estuarine resources. In a letter dated September 18, 2013 the USCG provided responses to the NMFS' comments and requested initiation of ESA Section 7 consultation for the smalltooth sawfish. On October 2, 2013 the NMFS requested additional information regarding project impacts and construction methodology. A response to this request was provided to NMFS on October 9, 2013. On December 11, 2013, the NMFS issued an ESA concurrence letter to the USCG.

The FWS provided comments on the DEIS, BA, and ESA Section 7 consultation request on August 23, 2013. The USCG responded to the FWS with additional information on September 13, 2013. On November 29, 2013, the FWS issued an ESA concurrence letter to the USCG.

The BA has been revised to reflect the comments provided by the NMFS and FWS and includes the additional information requested by these agencies. Copies of all correspondence with federal and state agencies are included in Appendix A.

4.3.6 AQUATIC PRESERVES

No designated aquatic preserves occur within the Fort Hamer Alternative or Rye Road Alternative study areas (Section 3.3.6).

No-Build Alternative

No designated aquatic preserves occur within the overall project area; therefore, implementation of the No-Build Alternative would not result in any impacts to aquatic preserves.

Fort Hamer Alternative

No designated aquatic preserves occur within or adjacent to the Fort Hamer Alternative Study Area; therefore, no aquatic preserves would be impacted by this alternative.

Rye Road Alternative

No designated aquatic preserves occur within or adjacent to the Rye Road Alternative Study Area; therefore, no aquatic preserves would be impacted by this alternative.

4.3.7 WATER QUALITY

Generally, roadway and bridge improvement projects can result in potential impacts to water quality during construction and during operation of the completed facility via stormwater runoff. To address potential water quality issues during construction, projects are required to develop and adhere to a Stormwater Pollution Prevention Plan (SWPPP) during the construction period. In Florida, the SWPPP must be approved by the FDEP prior to the start of construction.

With either build alternative, stormwater runoff from the constructed bridges and roadways would be collected and treated via a stormwater conveyance system. A system of drainage inlets, pipes, ditches, and swales would direct stormwater runoff to treatment ponds constructed in uplands adjacent to the roadways within each alternative. The stormwater management system for either build alternative would be designed to meet the presumptive criteria requirements established by the SWFWMD in Rule 40D-4, F.A.C. Issuance of the Environmental Resource Permit (ERP) by the SWFWMD constitutes water quality certification of the project in accordance with State of Florida and EPA requirements. As of this writing, an ERP application has not been submitted to the SWFWMD.

No-Build Alternative

With the No-Build Alternative no roadway improvements or bridges would be constructed in the study areas other than those already programmed and not part of either build alternative. Therefore, the No-Build Alternative would not result in additional impacts to water quality.

Fort Hamer Alternative

As stated above, the Fort Hamer Alternative would be designed to include a stormwater collection and treatment system pursuant to state requirements. Stormwater runoff from the new bridge and roadway would be directed through this stormwater treatment system. As a result, implementation of the Fort Hamer Alternative would not result in additional water quality impacts.

Rye Road Alternative

The Rye Road Alternative would be designed to include a stormwater collection and treatment system pursuant to state requirements. Stormwater runoff from the new bridge and roadway would be directed through this stormwater treatment system. As a result, implementation of the Rye Road Alternative would not result in additional water quality impacts.

4.3.8 OUTSTANDING FLORIDA WATERS (OFWs)

No designated OFWs occur within the Fort Hamer Alternative or Rye Road Alternative study areas (Section 3.3.8).

No-Build Alternative

Implementation of the No-Build Alternative would not result in any impacts to designated OFWs.

Fort Hamer Alternative

No OFWs would be impacted by implementation of the Fort Hamer Alternative.

Rye Road Alternative

No OFWs would be impacted by implementation of the Rye Road Alternative.

4.3.9 WILD AND SCENIC RIVERS

No designated Wild and Scenic Rivers occur within the Fort Hamer Alternative or Rye Road Alternative study areas (Section 3.3.9).

No-Build Alternative

No designated Wild and Scenic Rivers would be impacted by implementation of the No-Build Alternative.

Fort Hamer Alternative

No designated Wild and Scenic Rivers would be impacted by implementation of the Fort Hamer Alternative.

Rye Road Alternative

No designated Wild and Scenic Rivers would be impacted by implementation of the Rye Road Alternative.

4.3.10 GROUNDWATER

No sole-source aquifers are present in Manatee County, including the study areas of both build alternatives (Section 3.3.10). Either build alternative would be designed, constructed, and operated to meet the presumptive criteria requirements for water quality and quantity specified by the State of Florida ERP.

No-Build Alternative

Implementation of the No-Build Alternative would have no impacts to sole-source aquifers nor would result in degradation of groundwater resources.

Fort Hamer Alternative

Implementation of the Fort Hamer Alternative would have no impacts to sole-source aquifers nor would result in degradation of groundwater resources.

Rye Road Alternative

Implementation of the Rye Road Alternative would have no impacts to sole-source aquifers nor would result in degradation of groundwater resources.

4.3.11 FLOODPLAINS AND FLOODWAYS

No-Build Alternative

Implementation of the No-Build Alternative would not result in impacts to any designated floodplains and floodways.

Fort Hamer Alternative

Within the Fort Hamer Alternative, the proposed Fort Hamer Bridge and associated roadway improvements encroach upon Zone X500 and Zone AE of the Manatee River. The proposed bridge does not impact the floodplain but the roadway approaches, proposed stormwater ponds, and access roads do impact the floodplain. Within the Fort Hamer Alternative, 6.2 acres are located within Zone X500 (between the 100-year and 500-year flood levels) and 21.7 acres are located within Zone AE (100-year flood zone). There is no impact to the Manatee River floodway.

Rye Road Alternative

Within the Rye Road Alternative, the proposed bridge widening does not impact the floodplain but the roadway bridge approaches, proposed stormwater ponds, and widened roadways do impact the floodplain. Within the footprint of the widened Rye Road and Golf Course Road, 7.9 acres are located within Zone X500 (between the 100-year and 500-year flood levels) and 13.9 acres are located within Zone AE (100-year flood zone). There is no impact to the Manatee River floodway.

Table 4-16 summarizes the floodplain impact acreage for each build alternative.

TABLE 4-16
SUMMARY OF FLOODPLAIN ENCROACHMENT

Alternative	Floodplain Encroachment FEMA Zone AE (acres)	Floodplain Encroachment FEMA Zone X500 (acres)
No-Build Alternative		
Existing or Proposed	0.0	0.0
Fort Hamer Alternative		
Existing	2.7	0.5
Proposed	21.7	6.2
Rye Road Alternative		
Existing	5.1	1.4
Proposed	13.9	7.9

Mitigation Measures

To compensate for the proposed floodplain impacts, floodplain mitigation measures would be required for either alternative. These mitigation measures would consist of the construction of floodplain compensation areas in each impacted drainage basin to provide floodplain compensation for the floodplain areas filled as a result of the project. These floodplain compensation areas would be located and sized during final design and permitting to meet all federal, state, and local floodplain ordinances and rules.

4.3.12 COASTAL ZONE CONSISTENCY

The State of Florida has established a Coastal Zone Management Plan (CZMP) to protect specific coastal areas throughout the state. The state Department of Community Affairs (DCA) provides determination of a project's consistency with that plan. In a letter dated October 23, 2000, the DCA determined that the Fort Hamer Bridge project, as proposed by the Federal Highway Administration (FHWA)/FDOT, was consistent with the state's CZMP (a copy of the letter is contained in Appendix K-1). A similar consistency letter has been requested on behalf of the USCG.

No-Build Alternative

The No-Build Alternative would not affect any coastal zone resources.

Fort Hamer Alternative

Implementation of the Fort Hamer Alternative would not affect any coastal zone resources.

Rye Road Alternative

Implementation of the Rye Road Alternative would not affect any coastal zone resources.

4.3.13 COASTAL BARRIER ISLAND RESOURCES

No coastal barrier islands, as defined by the *Coastal Barrier Resource Act* (16 U.S.C. 3501 et seq.), occur within the study areas for either build alternative (Section 3.3.13).

No-Build Alternative

Implementation of the No-Build Alternative would not affect any coastal barrier island resources.

Fort Hamer Alternative

Implementation of the Fort Hamer Alternative would not affect any coastal barrier island resources.

Rye Road Alternative

Implementation of the Rye Road Alternative would not affect any coastal barrier island resources.

4.3.14 FARMLANDS

No prime farmland, unique farmland, or land of statewide or local importance designated by the *Farmland Protection Policy Act* (FPPA) occurs within the Fort Hamer Alternative or Rye Road Alternative study areas (Section 3.3.14).

No-Build Alternative

Implementation of the No-Build Alternative would not result impact any FPPA-designated lands.

Fort Hamer Alternative

Implementation of the Fort Hamer Alternative would not result impact any FPPA-designated lands.

Rye Road Alternative

Implementation of the Rye Road Alternative would not result impact any FPPA-designated lands.

4.3.15 VISUAL AND AESTHETICS

These features examine not only the viewshed in which a proposed project may occur but also the visual and aesthetic quality of the project itself. For example, the proposed river crossing of the Fort Hamer Alternative is a new crossing and, therefore, introduces a new structure within a currently unobstructed viewshed, compared to the Rye Road Alternative river crossing that is adjacent to an existing structure.

Both the Fort Hamer and the Rye Road Alternatives utilize existing roadway corridors, so their impact on the viewshed along existing roadways is not significant. However, there is a substantial difference in their potential visual impacts at the Manatee River as described below.

No-Build Alternative

With the No-Build Alternative no new roadway improvements or bridges would be constructed in the study areas except those already programmed and not part of either build alternative. Therefore, implementation of the No-Build Alternative would not affect the visual and aesthetic qualities of the project area.

Fort Hamer Alternative

The Fort Hamer Alternative proposes a new mid-level fixed-span bridge across the Manatee River where no bridge currently exists. As such, the Fort Hamer Alternative results in a visual impact from the adjacent sides of the river as well as from the river itself. The bridge structures would be visible from Fort Hamer Park, the River Wilderness subdivision, and the Waterlefe subdivision.

During the design phase, Manatee County would coordinate with potentially affected property owners (e.g., homeowner associations) regarding opportunities for aesthetic treatments at the bridge and along the roadway portion of the alternative. There would be opportunities to consider adding architectural features to the approaches, piers, lighting, and superstructure of the new bridge that would minimize visual and aesthetic impacts in the immediate area. Examples include concrete and motifs impressed in concrete retaining walls. Additionally, there is the opportunity to provide a scenic overlook on the eastern side of the proposed bridge incorporated with the sidewalk.

Rye Road Alternative

In 2008, Manatee County reconstructed the two-lane, low-level, fixed-span bridge over the Manatee River on Rye Road. The Rye Road Alternative proposes a matching two-lane bridge adjacent to the new structure. As such, the proposed bridge would result in only a minor impact to the viewshed. The Rye Road Alternative also proposes to widen Rye Road, Golf Course Road, and the northern segment of Fort Hamer Road from two to four lanes. This widening would visually impact residents living adjacent to the corridor.

4.3.16 SUMMARY OF NATURAL ENVIRONMENT IMPACTS

Table 4-17 summarizes the potential natural environmental impacts associated with each alternative.

4.4 PHYSICAL CHARACTERISTICS

4.4.1 NOISE

The evaluation of impacts from noise examines those properties that are close to the project and are properties with noise-sensitive functions, such as homes, schools, churches, hospitals, and specialized medical facilities. Once these properties are identified, the projected traffic volumes are then computer-modeled to simulate the future noise conditions. If a substantial increase in noise level occurs then various noise barrier analysis are performed to examine the effectiveness of a barrier. If a barrier provides a "benefit" to a property by reducing the increase, a cost benefit analysis is then performed to determine if the expenditure is justified based on the number of properties that would benefit from the barrier.

4.4.1.1 Measured Noise Levels

Existing and future noise levels (with and without the Proposed Action) were modeled using the Traffic Noise Model (TNM-Version 2.5). To ensure that these predictions are as accurate as possible, the computer model was validated using measured noise levels at locations adjacent to the project corridors. Traffic and meteorological data including motor vehicle volumes, vehicle mix, vehicle speeds, and wind/cloud conditions were recorded during each measurement period.

The field measurements for this FEIS were conducted in accordance with the FHWA's *Measurement of Highway-Related Noise*. The field measurements were obtained using a Metrosonics dB-3100. The Dosimeter was calibrated as per the manufacturer's specifications before and after each monitoring period with a Metrosonics cl-304 Calibrator.

The recorded traffic data were used as input for the TNM to determine if, given the topography and actual site conditions of the area, the computer model could "re-create" the measured levels. A noise prediction model is considered within the accepted level of accuracy if measured and predicted noise levels are within a tolerance standard of 3 decibels on the A-weighted scale [dB(A)].

Table 4-18 presents the field measurements and the validation results for the Fort Hamer Alternative. As shown, the ability of the model to accurately predict noise levels for the project was confirmed. Documentation in support of the validation is located in the Noise Study Report (NSR) in Appendix F of this FEIS.

Table 4-19 presents the field measurements and the validation results for the Rye Road Alternative. As shown, the ability of the model to accurately predict noise levels for the project was confirmed. Documentation in support of the validation is located in Appendix F.

TABLE 4-17
NATURAL ENVIRONMENT IMPACTS SUMMARY

Section	Issue	No-Build Alternative	Fort Hamer Alternative	Rye Road Alternative
4.3.1	Land Use/Vegetative Cover	No additional impacts.	19.4 acres open land 6.8 acres forest converted to roadway, ROW, and ponds.	19.0 acres agriculture 3.0 acres open land 7.5 acres forest converted to roadway, ROW, and ponds.
4.3.2	Wetlands	No additional impacts.	2.05 acres fill 1.01 acres shading 1.28 acres secondary	2.51 acres fill 0.01 acres shading 0.00 acres secondary
4.3.3	Essential Fish Habitat (EFH)	No additional impacts.	0.16 acres fill 1.01 acres shading	0.00 acres
4.3.4	Wildlife	No additional impacts.	Localized general decline in mammal and bird populations due to habitat loss. Increased potential for road kill.	Localized general decline in mammal and bird populations due to habitat loss. Increased potential for road kill.
4.3.5	Threatened and Endangered Species	No effects.	"May affect, but not likely to adversely affect:" • Smalltooth sawfish (F) • Eastern indigo snake (F) • Wood stork (F) • West Indian manatee (F) • Critical habitat for West Indian manatee (F) • Gopher tortoise (S) • Pine snake (S) • Florida mouse (S) • Gopher frog (S) (F)=Federally-Listed (S)=State-Listed	"May affect, but not likely to adversely affect:" • Crested caracara (F) • Eastern indigo snake (F) • Wood stork (F) • West Indian manatee (F) • Critical habitat for West Indian manatee (F) • Florida scrub jay (F) • Gopher tortoise (S) • Pine snake (S) • Florida mouse (S) • Gopher frog (S) (F)=Federally-Listed (S)=State-Listed
4.3.6	Aquatic Preserves	N/A	N/A	N/A
4.3.7	Water Quality	No additional impacts.	No additional impacts.	No additional impacts.
4.3.8	Outstanding Florida Waters	N/A	N/A	N/A
4.3.9	Wild and Scenic Rivers	N/A	N/A	N/A
4.3.10	Groundwater	No additional impacts.	No additional impacts.	No additional impacts.
4.3.11	Floodplains and Floodways	No additional impacts.	27.9 acres floodplains 0.0 acres floodways Compatible with existing floodplain management programs.	21.8 acres floodplains 0.0 acres floodways Compatible with existing floodplain management programs.
4.3.12	Coastal Zone Consistency	Consistent	Consistent	Consistent
4.3.13	Coastal Barrier Island Resources	N/A	N/A	N/A
4.3.14	Farmlands	N/A	N/A	N/A
4.3.15	Visual and Aesthetics	No additional change.	New river crossing with increased vehicle traffic on Upper Manatee River Road and Fort Hamer Road.	Additional roadway and bridge lanes.

N/A = not applicable. None of these designations occur within the project area.

TABLE 4-18
VALIDATION DATA – FORT HAMER ALTERNATIVE

Location	Measurement Period	Noise Level (dB(A))			Valid
		Modeled	Measured	Difference	
Upper Manatee River Road	1	60.0	57.9	2.1	Yes
	2	60.5	58.2	2.3	Yes
	3	59.7	58.2	1.5	Yes
Fort Hamer Road	1	45.8	48.7	-2.9	Yes
	2	46.6	48.0	-1.4	Yes
	3	47.1	48.9	-1.8	Yes

TABLE 4-19
VALIDATION DATA – RYE ROAD ALTERNATIVE

Location	Measurement Period	Noise Level (dB(A))			Valid
		Modeled	Measured	Difference	
Rye Road at Country Creek	1	62.0	60.6	1.4	Yes
	2	61.7	60.6	1.1	Yes
	3	62.7	61.1	1.6	Yes
Golf Course Road west of 167th Avenue East	1	56.0	53.7	2.3	Yes
	2	56.7	54.0	2.7	Yes
	3	57.6	55.9	1.7	Yes

4.4.1.2 Results of the Noise Analysis

The TNM predicted traffic noise levels at receptors along the Fort Hamer Alternative with and without the proposed improvements. The predicted noise levels are detailed in Table 6 of the NSR located in Appendix F. The portion of the improved road between Winding Stream Way and the Manatee River is on new alignment; therefore, measured background noise levels were used to represent existing and No-Build Alternative noise levels for the receptor sites in this area (Sites 13W-35W and 4E). Documentation supporting the measured background levels and aerial maps showing the locations of the noise-sensitive receptors are included in Appendix F.

Existing exterior traffic noise levels are predicted to range from 37.5 to 54.5 dB(A). The results of the analysis indicate that existing traffic noise levels did not approach, meet, or exceed the Noise Abatement Criteria (NAC) at any of the noise-sensitive receptors.

In the future (year 2035) without the proposed improvements (No-Build), exterior traffic noise levels are predicted to range from 40.4 to 57.4 dB(A). These levels do not approach, meet, or exceed the NAC.

Finally, with the proposed improvements for the Fort Hamer Alternative, exterior traffic noise levels are predicted to range from 42.6 to 62.0 dB(A) at the 39 noise-sensitive sites evaluated. These levels do not approach, meet, or exceed the NAC. The results also indicate that one site (13W) is predicted to experience noise levels that substantially exceed existing noise levels (an increase of 15 dB(A) or more).

Note that traffic noise levels at Fort Hamer Park are not expected to approach, meet, or exceed NAC under the existing condition or in the future with either the No-Build Alternative or the two build alternatives.

The TNM predicted traffic noise levels at receptors along the Rye Road Alternative with and without the proposed improvements. The predicted noise levels are detailed in Table 7 of the NSR located in Appendix F. The results of the analysis indicate that existing traffic noise levels did not approach, meet, or exceed the NAC at any of the noise-sensitive receptors along the Rye Road Alternative.

In the future (year 2035) without the proposed improvements (No-Build), exterior traffic noise levels are predicted to range from 48.2 to 65.6 dB(A), none of which approach, meet, or exceed the NAC.

Results for the Rye Road Alternative indicate that exterior noise levels are predicted to range from 52.7 to 69.2 dB(A) at 182 noise-sensitive sites with levels predicted to approach, meet, or exceed the NAC at 13 noise-sensitive sites. Two of the impacted receptors, Sites 160 and 161, were field verified and identified as abandoned commercial landscape/nursery structures. As such, these sites were not evaluated for noise abatement. Of the remaining 11 impacted sites, two are residences in Mill Creek subdivision (Sites 1 and 21), two are residences in Country Creek (Sites 74 and 79), five are residences in Rye Acres (Sites 122-125), and two are considered scattered residences (Sites 130 and 183). Additionally, traffic noise levels for five noise-sensitive sites (Sites 154, 163, 172, 175, and 186) are predicted to increase substantially as a result of the Rye Road Alternative. All are scattered single-family residences.

Note that traffic noise levels at Rye Preserve are not expected to approach, meet, or exceed NAC under the existing condition or in the future with either the No-Build Alternative or the two build alternatives.

Aerial maps showing the locations of the noise-sensitive receptors are included in Appendix F.

4.4.1.3 Evaluation of Noise Abatement Alternatives

Utilizing the FHWA criteria, noise abatement measures must be considered when predicted traffic noise levels approach or exceed the NAC. The measures considered for this FEIS were traffic management, alternative roadway alignment, buffer zones, and noise barriers. The following discusses the feasibility (e.g., amount of noise reduction, engineering considerations) and reasonableness (e.g., number of noise-sensitive sites benefited, absolute noise levels, cost, etc.) of the measures.

Traffic Management

Traffic management measures that limit motor vehicle speeds and reduce volumes can be effective noise mitigation measures. However, these measures also negate a project's ability to accommodate forecasted traffic volumes. For example, if the posted speed were reduced, the capacity of the roadway to handle the forecast motor vehicle demand would also be reduced.

Therefore, reducing traffic speeds and/or traffic volumes is inconsistent with the goal of improving the ability of the roadway to handle the forecast volumes. Although feasible, traffic management measures are not considered a reasonable noise mitigation measure for the project.

Alternative Roadway Alignment

The proposed alignment seeks to minimize the need for additional ROW within the project corridor. Maintaining the alignment within the existing ROW, where feasible, would minimize impacts to surrounding noise-sensitive sites located both east and west of the roadway.

Noise Buffer Zones

Providing a buffer between a roadway and future noise-sensitive land uses is an abatement measure that can minimize/eliminate noise impacts in areas of future development. To encourage use of this abatement measure through local land use planning, noise contours have been developed and are further discussed later in Section 4.4.1.7.

Noise Barriers

Noise barriers have the potential to reduce noise levels by blocking the sound path between the motor vehicles on the roadway (the source) and the noise-sensitive sites adjacent to the roadway. To be effective in reducing traffic noise, a noise barrier must be relatively long, continuous (without intermittent openings), and sufficiently tall to provide the necessary reduction in noise levels. In order for a barrier to be considered both feasible and reasonable, the barrier should:

1. Provide a minimum insertion loss (IL) or noise reduction of 5 dB(A) with a design goal of 7 dB(A) or more being desirable;

2. Cost no more than $42,000 per benefited receptor (a benefited receptor is a site that receives at least a 5 dB(A) reduction in noise from the barrier); and

3. Benefit at least two impacted noise-sensitive receptors, with one or more meeting the design goal of 7 dB(A).

The current estimated cost to construct a noise barrier (materials and labor) is $30.00 per square foot.

Feasibility factors that relate to noise barriers include driver/pedestrian sight distance (safety), ingress and egress requirements to and from affected properties, ROW requirements (including access rights and easements for construction and/or maintenance), impacts on existing/planned utilities, and drainage.

After considering the amount of reduction that may be provided and the cost reasonableness, additional factors must also be considered when evaluating a noise barrier as a potential noise abatement measure. These factors address both the feasibility of a barrier (given site-specific details, can a barrier actually be constructed) and the reasonableness of a barrier.

Reasonableness factors can include:

- The relationship of the predicted future noise levels to the NAC (do the predicted levels approach, meet, or far surpass the NAC);
- Land use stability (are the noise-sensitive land uses likely to remain for an indefinite period of time);
- Antiquity (the amount of development that has occurred before and after the initial construction of a roadway);
- The desires of the affected property owners to have a noise barrier adjacent to their property; and
- Aesthetics.

4.4.1.4 Noise Barrier Analysis

The TNM (Version 2.5) was used to evaluate the effectiveness of noise barriers to reduce traffic noise levels at the affected noise-sensitive sites. The noise barrier lengths were optimized to maintain at least a 5 dB(A) reduction at the affected receivers while reducing excess barrier length.

As previously stated, during the year 2035 with the proposed improvements (the build alternatives), noise levels are predicted to approach, meet or exceed the NAC at 11 sites (along the Rye Road Alternative), and traffic noise levels are predicted to increase substantially at six noise-sensitive sites (one on the Fort Hamer Alternative and five on the Rye Road Alternative). The following discusses the feasibility and reasonableness of providing noise barriers for the 17 affected noise-sensitive sites.

No-Build Alternative

In the absence of any capacity improvements, no noise impacts are anticipated from the No-Build Alternative. However, traffic volumes are projected to increase over time and the No-Build Alternative does not provide any provisions for noise abatement measures.

Fort Hamer Alternative

As previously stated, traffic noise levels are not predicted to approach, meet, or exceed the NAC at any of the noise-sensitive sites along the Fort Hamer Road corridor as a result of the Fort Hamer Alternative. One noise-sensitive site was predicted to experience a substantial increase in traffic noise levels – Receptor 13W located on Winding Stream Way at the back entrance into the Waterlefe subdivision. However, in order for a noise barrier to be considered feasible, two or more impacted receptors must achieve a 5 dB(A) or greater reduction. No other receptors are benefited; therefore, a noise barrier is not considered a feasible noise abatement measure at this location.

Rye Road Alternative

As previously stated, during the Design Year (2035) for the Rye Road Alternative, traffic noise levels are predicted to approach, meet, or exceed the NAC at 11 sites, of which 10 sites are located along Rye Road and the remaining site is on Fort Hamer Road. In addition, traffic noise levels are predicted to increase substantially at five noise-sensitive sites, two on Golf Course Road, and three on Fort Hamer Road. Barriers were not modeled for Receptors 1, 21, 74, 79, 130, 154, 163, 172, 175, 183, and 186 because they are single impacted receptors (no other nearby receptors are impacted) and, as such, barriers are not considered reasonable. One noise barrier was analyzed for the Rye Road Alternative, at Rye Acres.

Barrier 1E: Residences at Rye Acres Subdivision

Barrier 1E was evaluated for the five affected residences (Receptors 122-125) located in the Rye Acres subdivision along the east side of Rye Road approximately 1 mile south of Golf Course Road. Receptor 122 represents two residences. The predicted future noise levels are as follows: Receptor 122 - 67.2 dB(A) (two sites), Receptor 123 - 68.8 dB(A), Receptor 124 - 68.6 dB(A), and Receptor 125 - 68.8 dB(A). A noise barrier was evaluated located 5 feet inside the east ROW line for Rye Road. The length of the barrier was optimized within the TNM in an attempt to provide at least 5 dB(A) of traffic noise reduction and to meet the design goal of 7 dB(A) of traffic noise reduction for at least two of the affected residences. The height of the barrier was evaluated from 8 to 22 feet in 2-foot increments.

The affected residences are located somewhat closely together facing the highway with driveways opening directly on the highway. As such, the barrier included openings for these driveways, which reduced the overall effectiveness of the barrier.

The results of Barrier 1E are provided in **Table 4-20**. As shown, the desired goal of reducing predicted traffic noise levels by 7 dB(A) or more could be achieved for two sites designated as Receptor 122 at a wall height of 16 feet. One additional receptor, Receptor 121, received a benefit of 5.5 dB(A). At a height of 16 feet, the total cost to construct the barrier is $546,232 and the cost per benefitted receptor is $136,558. The cost per benefitted receiver greatly exceeds the cost reasonable guideline, therefore, Barrier Rye 1E is not considered reasonable.

An aerial photograph showing the modeled noise barrier location at Rye Acres is included in Appendix F.

4.4.1.5 Summary of Noise Barrier Analysis

Based on the noise analysis performed, the noise levels for the Fort Hamer Alternative ranged from 42.6 to 62.0 dB(A) for the future year 2035 build alternative at the 39 sites evaluated, with no sites predicted to approach, meet, or exceed NAC. One site is predicted to experience a substantial increase in noise levels (an increase of 15 dB(A) or more). The noise levels ranged from 40.4 to 57.4 dB(A) for the future year 2035 No-Build Alternative.

TABLE 4-20
BARRIER 1E: RESIDENCES AT RYE ACRES SUBDIVISION
(RECEPTORS 122-125)

Barrier Height (ft.)	Affected Residences with Insertion Loss of dB(A)						Number of Benefited Residences			Total Estimated Cost**	Cost Per Benefited Residence	Cost Reasonable Yes/No
	5	6	7	8	9	10 or >	Affected	Other*	Total			
8	0	0	0	0	0	0	0	0	0	N/A	N/A	No
10	1	2	0	0	0	0	3	0	3	$341,395	$113,798	No
12	2	2	0	0	0	0	3	1	4	$409,674	$102,419	No
14	1	3	0	0	0	0	3	1	4	$477,953	$119,488	No
16	1	1	2	0	0	0	3	1	4	$546,232	$136,558	No
18	1	1	2	0	0	0	3	1	4	$614,511	$153,628	No
20	1	1	2	0	0	0	3	1	4	$682,790	$170,698	No
22	1	1	2	0	0	0	3	1	4	$751,069	$187,767	No

*Other = Receivers determined to be unaffected by the Build Alternative (traffic noise levels less than 66 dB(A), but benefited by the noise barrier.
**Current FDOT estimated cost to construct a noise barrier (materials and labor) is $30.00 per square foot.

The noise levels for the Rye Road Alternative ranged from 52.7 to 69.2 dB(A) for the future year 2035 build alternative at the 181 sites evaluated, with 11 sites predicted to approach, meet, or exceed NAC. Five sites are predicted to experience a substantial increase in noise levels. The noise levels ranged from 48.2 to 65.6 dB(A) for the future year 2035 No-Build Alternative.

Although feasible, traffic management, alternative roadway alignments, and noise buffer zones were determined to be unreasonable methods to reduce the predicted traffic noise impacts for the 17 impacted sites. Noise barriers were evaluated to determine if barriers would be a feasible and reasonable noise abatement measure. For the Fort Hamer Alternative, noise barriers were not found to be a feasible noise abatement measure. For the Rye Road Alternative, one barrier was analyzed for the five impacted noise-sensitive sites at Rye Acres. The results of the analysis indicate that construction of the noise barrier appears feasible; however, the barrier is not considered reasonable. The effectiveness of the barrier was affected due to required property access (driveways) and the cost per benefitted receptor greatly exceeded the cost reasonable guideline. Therefore, noise barriers were not considered to be a reasonable noise abatement measure for either of the two build alternatives.

4.4.1.6 Construction Noise and Vibration

Construction of roadway improvements may have a temporary impact on noise-sensitive sites adjacent to the project corridor. Trucks, earth moving equipment, pumps, and generators are construction noise and vibration sources. Construction noise and vibration impacts would be minimized by adherence to Best Management Practices (BMPs) and current standard specifications for road and bridge construction. Special provisions can be included in the construction contract that relate to the control of noise.

4.4.1.7 Noise Contours

Land uses such as residences, schools, churches, auditoriums, recreation areas, and parks are considered incompatible with highway noise levels above 66 dB(A). In order to reduce the possibility of additional noise-related impacts, noise level contours were developed for the future improved roadway facility. These noise contours delineate the distance from the improved roadway's edge-of-travel lane to where the 66 dB(A) (based on FHWA Activity Categories B and C) is expected to occur in the year 2035 with the proposed improvements.

From Waterlefe Boulevard to Rive Isles subdivision entrance along the Fort Hamer Alternative, the 66 dB(A) noise level extends 56 feet from the improved roadway's edge-of-travel lane. Along the Rye Road Alternative the 66 dB(A) noise level extends 69 to 86 feet from the improved roadway's edge-of-travel lane, depending on the roadway segment (**Figure 4-9** and Appendix F).

4.4.2 AIR QUALITY

The analysis of air quality is conducted to determine if the existing level of specific pollutants in the area of the two build alternatives (Fort Hamer Alternative and Rye Road Alternative) would meet or exceed the National Ambient Air Quality Standards (NAAQS). The alternatives were subjected to a screening model that makes various conservative worst-case assumptions related to site conditions, meteorology and traffic. The FDOT's screening model, *CO Florida 2004* (released September 7, 2004), uses the latest EPA-approved software (*MOBILE 6.1/6.2* and *CAL3QHC*) to produce estimates of 1- and 8-hour carbon monoxide (CO) at default air quality receptor locations.

The No-Build Alternative, Fort Hamer Alternative, and Rye Road Alternative for both the opening year 2015 and the design year 2035 were evaluated. Based on the results from the screening model, the highest project-related CO 1- and 8-hour levels are not predicted to meet or exceed the 1- or 8-hour NAAQS for this pollutant for either the No-Build Alternative or the two build alternatives. As such, the project 'passes' the screening model for the No-Build Alternative, Fort Hamer Alternative, and Rye Road Alternative for both the opening and design years. The results of the screening model are included in Appendix G.

The Proposed Action is located in Manatee County, Florida, an area currently designated as being attainment for all of the NAAQS under the criteria provided in the *Clean Air Act* (CAA). Therefore, the CAA conformity requirements do not apply to the project.

Construction activities would cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts would be minimized by adherence to all applicable state and local standards, regulations, and BMPs.

FIGURE 4-9
PREDICTED NOISE CONTOURS

	Roadway Segment	Distance to 66 dB(A)* Feet from Edge-of-Travel Lane
	Fort Hamer Alternative	
A	Waterlefe Boulevard to River Isles Run	56
	Rye Road Alternative	
B	SR 64 to Upper Manatee River Road	73
C	Upper Manatee River Road to Golf Course Road	86
D	Golf Course Road from Rye Road to Fort Hamer Road	80
E	Fort Hamer Road from Golf Course Road to US 301	69

* Distances do not reflect any reduction in noise levels that would result from existing structures (shielding).

4.4.3 CONSTRUCTION

Impacts from construction activities are temporary but are regulated by County requirements and state and federal permit criteria. The following discussion relates to both the Fort Hamer Alternative and Rye Road Alternative. No impacts related to construction are anticipated for the No-Build Alternative.

Construction activities associated with the Proposed Action may result in temporary air, noise, vibration, water quality, traffic flow, and visual impacts for those residents and travelers within the immediate vicinity of the project.

Air quality effects would be temporary and would primarily be in the form of emissions from diesel-powered construction equipment and dust from embankment and haul road areas. Air pollution associated with the creation of dust particles are required to be controlled through the use of watering or the application of other controlled materials.

Noise and vibration effects would result from heavy equipment movement and construction activities such as pile driving and vibratory compaction of embankments. Specific noise level problems that may arise during construction of the project would be addressed by the County's Project Engineer.

Water quality effects resulting from construction activities and related erosion and sedimentation would be controlled through the use of BMPs in accordance with state and federal permit requirements.

Maintenance of traffic and sequence of construction would be planned and scheduled so as to minimize traffic delays throughout the project corridor. Signs would be used to provide notice of road closures and other pertinent information to the traveling public. The local news media would be notified in advance of road closings and other construction-related activities that could excessively inconvenience the community, allowing motorists, residents, and business persons to plan travel routes accordingly.

A sign providing the name, address, and telephone of a County contact person would be displayed at the construction site to assist the public in obtaining immediate answers to questions and logging complaints about project activity.

Access to all businesses and residences would be maintained to the extent practical through controlled construction scheduling. Traffic delays would be controlled to the extent possible where many construction operations are in progress at the same time. The contractor would be required to maintain one lane of traffic in each direction on affected roadways at all times and to comply with County BMPs.

For residents living along the project corridor, the presence of construction equipment and materials stored for the project may be visually displeasing; however, this is a temporary condition and should pose no substantial problem in the short-term.

Construction of the roadway and bridges requires excavation of unsuitable material (muck), placement of embankments, and use of materials such as limerock, asphaltic concrete, and Portland cement concrete. Demucking is anticipated at most of the wetland sites and would be conducted in accordance with permit conditions. Disposal would be on-site in detention areas or off-site at permitted locations. The removal of structures and debris would be in accordance with local and state regulatory agencies permitting this operation. The contractor is responsible for his methods of controlling pollution on haul roads, in borrow pits, other materials pits, and areas used for disposal of waste materials from the project. Temporary erosion control would consist of temporary grassing, sodding, mulching, sandbagging, slope drains, sediment basins, sediment checks, artificial coverings, and berms.

4.4.4 CONTAMINATION

No-Build Alternative

Multiple potentially contaminated sites exist along the Fort Hamer Alternative and Rye Road Alternative. Since the No-Build Alternative does not include any ground disturbance/excavation activities, implementation of the No-Build Alternative would not result in disturbance of these sites by Manatee County. Implementation of the No-Build Alternative would not result in the potential spread of contamination from these sites resulting from any actions by Manatee County. However, if contamination is present or is migrating from any of these sites, it is likely that such contamination would remain, or would continue to migrate from these sites, with implementation of the No-Build Alternative.

Fort Hamer Alternative

One site has been identified (Table 3-23) within the construction limits of the Fort Hamer Alternative as having the potential for hazardous materials and/or petroleum contamination as defined by regulatory agencies. This site is the former golf cart, mower maintenance, and storage area associated with the golf course at Waterlefe on Upper Manatee River Road. This site is within the Manatee County ROW for the Fort Hamer Alternative. Potential concerns associated with this site include unknown past practices for disposal of liquid waste products, batteries, and pesticides. If the Fort Hamer Alternative is selected for implementation, further assessment of this site, including soil and potentially groundwater sampling, would be required. The results of this assessment would be used by Manatee County, in coordination with the FDEP, to determine the extent, if any; the site would be cleaned up prior to construction of the alternative. With this commitment, it is unlikely that implementation of the Fort Hamer Alternative would result in the spread of contamination from this site.

Rye Road Alternative

Fourteen sites have been identified (Table 3-24) along the Rye Road Alternative that have the potential for hazardous materials and/or petroleum contamination as defined by regulatory agencies. Many of these sites are associated with former agriculture operations, underground storage tanks, and aboveground storage tanks. All but three of these sites have been assigned a Facility ID number by the FDEP. If the Rye Road Alternative is selected for implementation, further assessment of these sites, including soil and potentially groundwater sampling, would be required. The results of this assessment would be used by Manatee County, in coordination with the FDEP, to determine the extent, if any; these sites would be cleaned up prior to construction of the alternative. With this commitment, it is unlikely that implementation of the Rye Road Alternative would result in the spread of contamination from these sites.

It is recommended that limited sampling and testing be conducted at the "Medium" risk sites to determine the absence or presence of environmental contamination within the two alternatives. Section 3.4.4 in Chapter 3 defines the risk ratings (e.g, No, Low, Medium, and High). Subsurface soils from the ground surface to the water table should be screened with an Organic Vapor Analyzer (OVA) equipped with a Flame Ionization Detector (FID) using the standard

FDEP headspace method. Should these samples exhibit the likelihood of impacts, soil and groundwater samples should also be collected from these locations for laboratory analysis.

Based on site conditions, samples may be analyzed for one or more of the following: Volatile Organic Compounds (VOCs) using EPA Method 8021, Ethylene Dibromide (EDB) by EPA Method 504, Total Petroleum Hydrocarbons by the FL-PRO method, Polyneuclear Aromatic Hydrocarbons by EPA Method 8270, Chlorinated Pesticides by EPA Method 8081, Pesticides by EPA Method 8141, Herbicides by EPA Method 8151, and the metals arsenic, boron, copper, and zinc.

If excessively contaminated soils are discovered during excavations, testing should be conducted to determine the limits or extent of contamination. Excessively contaminated soil may not be returned into an excavation. Instead, the excessively contaminated soil should be removed and stockpiled on an impervious surface to prevent the further spread of contamination. Soil should then be further tested and treated on-site or be disposed of properly.

If contaminated groundwater is detected, testing should be conducted to determine the limits or extent of contamination. In contaminated areas, groundwater control systems should be isolated. Recovered contaminated groundwater cannot be discharged without treatment. Recovered contaminated groundwater should be collected, tested, treated on-site, and/or disposed of properly. A temporary discharge permit from FDEP would be required.

It must be recognized that the possibility still exists that other sites containing hazardous substances, hazardous wastes, petroleum products, or environmental contamination not identified during this assessment may exist on or in the immediate vicinity of either alternative. This is because regulatory agency records are not always complete; not all leaks, spills, and discharges are reported; and not all underground storage tanks (USTs) and above ground storage tanks (ASTs) are registered. Therefore, the purpose of this assessment is to reduce, but not eliminate, the unknown and uncertainty regarding the absence or presence of hazardous substances or environmental contamination that could adversely affect the Proposed Action.

Contamination during Construction

As with any roadway and bridge construction project, there is a potential for contamination impacts to occur during construction of either the Fort Hamer Alternative or Rye Road Alternative as a result of spills, leaks, or accidents. Fuels, hazardous materials, and equipment should be properly handled, stored, and maintained in accordance with state and federal requirements and permit conditions. It is the contractor's responsibility to ensure that emergency spill containment devices are readily available on-site and that on-call specialty cleanup contractors are available for spill containment and recovery should the need arise.

4.4.5 SCENIC HIGHWAYS

No designated scenic highways occur within the project area (Section 3.4.5).

No-Build Alternative

Implementation of the No-Build Alternative would not affect any designated scenic highways.

Fort Hamer Alternative

Implementation of the Fort Hamer Alternative would not affect any designated scenic highways.

Rye Road Alternative

Implementation of the Rye Road Alternative would not affect any designated scenic highways.

4.4.6 NAVIGATION

No-Build Alternative

No new bridges or travel lanes would be constructed across the Manatee River with the No-Build Alternative. Thus, implementation of the No-Build Alternative would not affect navigation of vessels on the river.

Fort Hamer Alternative

This alternative includes the construction of a two-lane, fixed-span bridge across the Manatee River.

The Fort Hamer Alternative includes construction of a mid-level, fixed-span bridge over the Manatee River with a vertical clearance of 26 feet over the channel. Surveys (Appendix A-2) and observations have revealed the presence of two private vessels upstream of the proposed bridge location that have a mast or structure height greater than 26 feet. Manatee County would coordinate with the owners of these vessels to mitigate the impact of the proposed bridge on the operation of these vessels. Mitigation options include, but are not limited to, relocation of the vessels and alternative docking arrangements.

There is a potential for temporary impacts to navigation to occur during construction of the bridge. These impacts could include short-term closure of the waterway (e.g., a few hours) as a result of movement and placement of construction barges or lifting of construction materials with cranes. To minimize environmental impacts, much of the construction would be conducted from a temporary trestle. The presence of this temporary trestle would not preclude navigation on the river; however, it is expected that mariners would need to exercise caution when navigating in the construction zone. Manatee County and the selected construction contractor would coordinate with the USCG to develop a plan to minimize disruptions to navigation on the Manatee River during construction of the bridge. Prior to construction, a Notice of Availability would be published detailing the construction plan and schedule.

When constructed in accordance with the USCG Bridge Permit conditions, it is anticipated that the Fort Hamer Alternative would result in *de minimis* effects to navigation on the Manatee River.

Rye Road Alternative

The Manatee River at the location of the existing Rye Road bridge is a navigable waterway. This alternative includes the construction of two additional lanes across the Manatee River adjacent to the existing two-lane bridge structure at Rye Road. The additional two-lane bridge structure would have the same horizontal and vertical clearance as the existing structure; thus, no impacts to navigation would result from the construction and operation of the Rye Road Alternative.

In accordance with 33 CFR 115.70, the USCG has given advance approval to the location and plans for bridges to be constructed across the waterway. Therefore, unless the USCG withdraws its advance approval, a USCG permit would not be required for the Rye Road Alternative.

4.4.7 SUMMARY OF PHYSICAL CHARACTERISTICS IMPACTS

Table 4-21 summarizes the potential physical impacts associated with each alternative.

TABLE 4-21
PHYSICAL CHARACTERISTICS IMPACTS SUMMARY

Section	Issue	No-Build Alternative	Fort Hamer Alternative	Rye Road Alternative
4.4.1	Noise	No impacts.	39 noise-sensitive receptors 1 meets or exceeds the NAC (includes receptors with substantial increase)	183 noise-sensitive receptors 16 meets or exceeds NAC (includes receptors with substantial increase)
4.4.2	Air Quality	Attainment	Attainment	Attainment
4.4.3	Construction	No additional impacts.	Temporary impacts of air quality, vibration, visual, noise, and maintenance of traffic.	Temporary impacts of air quality, vibration, visual, noise, and maintenance of traffic.
4.4.4	Contamination	No additional impacts.	1 Medium Risk Site	13 Low Risk Sites 1 Medium Risk Site
4.4.5	Scenic Highways	N/A	N/A	N/A
4.4.6	Navigation	No additional impacts.	2 vessels	No additional impacts.

N/A = not applicable. Designation does not occur within the project area.

4.5 INDIRECT IMPACTS

The previous sections discussed the various direct impacts associated with the No-Build Alternative and two build alternatives. Direct impacts are those:

> *"...which are caused by the action and occur at the same time and place." (40 CFR Section 1508.8)*

By comparison, indirect impacts are those:

> *"...which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." (40 CFR Section 1508.8)*

Examples of indirect impacts include, but are not limited to, changes in traffic patterns and noise levels and changes to water and air quality. The indirect impacts associated with the No-Build Alternative, Fort Hamer Alternative, and Rye Road Alternative are identified and discussed in the previous sections along with the direct impacts.

Table 4-22 below lists the indirect impact issues identified for the project alternatives and the corresponding section in which each is discussed.

TABLE 4-22
INDIRECT IMPACTS DISCUSSION SECTIONS

Section	Issue
4.1.1	Socioeconomic Conditions
4.1.2.2	Future Land Uses
4.1.4	Community Cohesion
4.1.6.1	Religious Centers
4.1.6.2	Schools
4.1.6.4	Public Facilities
4.1.7	Environmental Justice
4.4.1	Noise
4.4.2	Air Quality

4.6 CUMULATIVE IMPACTS

4.6.1 INTRODUCTION

The CEQ's regulations (40 CFR Sections 1500-1508) implementing the procedural provisions of NEPA, as amended (42 U.S.C. Section 4321 *et seq*.) define cumulative effect as:

> *".....the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR Section 1508.7)."*

For the purpose of this FEIS, the CEQ definition has been applied to cumulative effects. The resources discussed below are those that can be reasonably identified as potentially affected by the cumulative effects of each alternative.

This cumulative effects analysis identifies a number of environmental effects that are reasonably likely to occur as a result of implementation of each of the alternatives. These include alterations of wetlands, a change in public access across the Manatee River, traffic density and patterns, noise, and more. This FEIS neither identifies nor recommends mitigation measures for environmental effects that are not clearly and unambiguously linked to the build alternatives or more specifically related to actions subsequent to the USCG's decision.

4.6.2 DEVELOPMENT OF REGIONAL IMPACT

Development in Florida is characterized by a process consisting of several layers of regulatory review. Florida statutes and local regulations require mitigation for any impacts on natural resources, infrastructure, or other public resources. Typically, impacts are mitigated through paying a "fair share" for the specific impact, mitigating natural resources through purchasing mitigation credits, designating or creating conservation areas, or providing public services as a part of the proposed development. Therefore, much of the cumulative effect from development in the project area is being mitigated by this process.

As a part of the development review process in Manatee County, each Development of Regional Impact (DRI) is required to obtain permits for activities, as shown in **Table 4-23**.

TABLE 4-23
PERMITTING REQUIREMENTS FOR DRI AND SUB-DRI DEVELOPMENTS

Category	Reviewing Agencies	Review/ Permit	Mitigation Measures
Botanical	Manatee County SWFWMD FDA FWS/NMFS	Protected Species - Biological Assessment/ Biological Opinion/ Incidental Take Permit Trees: Tree Removal Permit	Habitat Creation Habitat Enhancement Habitat Preservation Tree Replacement
Wildlife	Manatee County FWC FWS/NMFS	Protected Species - Biological Assessment/ Biological Opinion/ Incidental Take Permit	Habitat Creation Habitat Enhancement Habitat Preservation
Ecologic	Manatee County SWFWMD/FDEP (Wetlands) USACE (Wetlands)	404 Dredge and Fill Permit Environmental Resource Permit	Wetlands Creation Wetlands Enhancement Habitat Preservation
Stormwater	SWFWMD FDEP	Environmental Resource Permit NPDES - SWPPP	Stormwater Treatment Stormwater Attenuation Floodplain Compensation
Cultural/ Historic Resources	SHPO	Cultural Resource Clearance	Documentation Recordation Preservation

Source: Manatee County Government, 2012.

Many developments in Florida fall below the threshold of a DRI. Sub-DRIs are developments that do not meet the threshold limit as established by F.S. Chapter 380. If a project attains a threshold of development, either with the number of residential units, area of commercial or industrial space, or area impacted by natural resource extraction, it is reviewed by local, regional, and state agencies. The DRI process is a multi-level review that involves several regulatory agencies, spanning planning and growth management, and including water resources, historic and cultural resources, public safety, disaster preparedness, wildlife and ecological resources, and transportation. The public has an opportunity to review and comment on the DRI document as well as participate in a public review through the public hearing process. The Tampa Bay Regional Planning Council (TBRPC) is the coordinator of the submittal and review of DRIs in

Manatee County in addition to local, state, and applicable federal agencies. **Table 4-24** addresses the DRI threshold level for different development types applicable in Manatee County. While not all of the development types may occur in Manatee County, they were listed to illustrate the scope of development that is regulated through the DRI process.

TABLE 4-24
THRESHOLDS FOR DRIs IN MANATEE COUNTY

Development Type	DRI Threshold
Residential	2,000 units
Attraction	Single performance: 2,500 parking spaces or 10,000 permanent seats; or serial performance: 1,000 parking spaces or 4,000 permanent seats.
Office	300,000 square feet gross or 600,000 square feet gross in an area suitable for an increase in threshold intensity.
Retail	400,000 square feet gross or 2,500 parking spaces.
Multiuse Development	Two or more land uses - sum of the threshold is greater than 145%; or three or more land uses with at least 100 dwelling units or 15% of the applicable threshold and the sum of the threshold is greater than 160%.
Schools	5,000+ full time students or physical expansion that would increase the student population by 20%; but does not apply to campus master plan adopted by the University's board of trustees.
Single-Owner Development	Two or more developments with the same ownership shall be aggregated and treated as a single development when they are physically proximate to each other; and there is a reasonable closeness in time between the completion and 80% or less of one development and the submission to a governmental agency of a master plan for another development; or the voluntary sharing of infrastructure; or a common advertising scheme or promotional plan.

Sources: TBRPC, 2011.

4.6.3 TREND ANALYSIS METHODOLOGY

Trend analysis methodology assesses the status of resources, ecosystems, and human communities over time and usually results in graphical projection of past and future conditions. Changes in the occurrence or intensity of stress over time can also be assessed. Trend analysis provides historical context that is useful to assessing the cumulative effects of proposed actions. The trend analysis methodology for land development within the project area utilized long-range planning information, building permit and development data, as well as GIS information regarding historic, present-day, and future land use development. An analysis of historical growth and development patterns, population estimates and projections, as well as land use patterns were utilized to generate a trend analysis for the project area.

Members of the Manatee County Planning Department were interviewed regarding the historic and present-day development of the county, as well as providing insight into the future development of the central and western parts of the county.

GIS information was utilized to illustrate the historic landscape dating to 1974. The present-day development maps were reviewed to identify where subdivisions have been platted, were under construction, or had been completed. U.S. Census information for population projections were acquired and reviewed to assess changes in population over time. Table 4-23 illustrates which regulatory agencies would review potential impacts or effects from each development and determine mitigation, if necessary.

4.6.4 REGIONAL GROWTH OVERVIEW (1900-1991)

Historically, Manatee County was mostly rural and undeveloped with large tracts of land utilized for agricultural operations, primarily cattle ranches, citrus groves, and tomato fields. Maps from the turn of the century through the 1940s illustrate little development in the eastern half of the County. Population was concentrated near the coast, where fishing towns supplied fish to markets in Key West, Florida and New Orleans, Louisiana.

The transportation network consisted of narrow roads on the west side of the county, connecting north to Tampa and south to Sarasota. There were few roads that serviced the largely agricultural area in east Manatee County. A ferry service ran between Manatee County and St. Petersburg. All commerce came through Tampa, a deep-water port, until Port Manatee was constructed in 1975.

The Sunshine Skyway Bridge was originally constructed in 1954, allowing for traffic and commerce to cross between Manatee County and points north to the Tampa Bay Region. The original dual-span bridge was replaced in 1987 with one structure to facilitate I-275, a major arterial along the southwest coast of Florida.

Although historically the slowest growing of the three counties that front Tampa Bay, Manatee County has experienced dramatic recent population growth. In 1970, the population of the County was 97,115. During the 1980s, Manatee County experienced a surge in growth, a pattern that followed a statewide growth trend. As of 1991, it had grown to 215,130, gaining some of Sarasota's winter visitor population and also year round residents from Tampa and St. Petersburg.

4.6.5 REGIONAL GROWTH OVERVIEW (1991-2013)

The large agricultural operations in Manatee County, primarily citrus production, have felt the most development pressure over the past two decades. The size of the parcels, combined with the decreased domestic demand for citrus, importing of citrus from other countries, and unpredictable weather patterns, have resulted in the property owners considering alternate uses for their property. The citrus industry, once a major force in the economy and landscape of the County, is still present, but not as vigorous as its historic past. Citrus groves have given way to development, as people moving to Florida sought more affordable alternatives to living in developed areas of Tampa and St. Petersburg.

Since adoption of the Manatee County's Comprehensive Plan in 1989, the development patterns and character of the region have changed significantly from the agricultural and rural character of the area. Properties have been annexed into the municipal boundaries of Bradenton and Palmetto as these local governments have extended their boundaries east. Site Specific Comprehensive Plan Land Use Amendments have been adopted allowing for additional intensity of development within the western portions of Manatee County and along I-75. Suburban-style development in the form of gated communities, increased construction of homes and services in these areas, as well as an expanded transportation network, retail opportunities, and other community services, has been planned for and constructed.

The growth rate that tapered during the 1990s began to increase with an in-migration of residents resulting in the construction of an average of 4,000 dwelling units per year from 2000 to 2004. A surge in growth occurred from 2004 to 2005 when approximately 6,000 dwelling units constructed each year. However, the housing market collapsed in 2006. Subsequent annual housing start averages fell to approximately 1,250 new homes between 2007 and 2011 (Figure 3-6).

Although the housing market has slowed, the in-migration of people has not ceased. **Table 4-25** illustrates the populations observed in and projections for Manatee County from 2005 to 2035. The population increased by 50.49 percent between 2000 and 2010. From 2010 to 2015, the growth rate is projected to slow to 6.69 percent then accelerate to 15.8 percent from 2015 to 2025. By 2035, Manatee County is projected to have a population of 441,400.

TABLE 4-25
MANATEE COUNTY POPULATION PROJECTIONS - UNINCORPORATED AREAS

Year	Population	Population Increase	Percent Increase	Population Increase/Year
2000	211,707	-	-	-
2010	318,600	106,893	50.9	10,689
2015	339,900	21,300	6.7	4,260
2025	393,600	53,700	15.8	5,370
2035	441,400	47,800	12.1	4,780

Source: Manatee County Planning Department, 2013.

Rapid, wide-spread development has occurred within the project area since 1991. However, only seven developments have been completed within the project area. Other developments have been approved by Manatee County and are in various stages of construction. There are nearly equal amounts of single- and multi-family residential dwelling units within and adjacent to the project area (**Table 4-26**). Over 2 million square feet of proposed commercial development is approved within and abutting the project area. There are two approved DRIs within the project area.

TABLE 4-26
PROJECTED DEVELOPMENT RELATED TO THE PROJECT AREA

Entitlement	Development Within the Project Area	Development Abutting the Project Area	Total Approved Development
Single-Family Residential	15,415 Dwelling Units	16,815 Dwelling Units	32,230 Dwelling Units
Multi-Family Residential	1,807 Dwelling Units	1,454 Dwelling Units	3,261 Dwelling Units
Commercial	1,022,000 Square Feet	1,308,929 Square Feet	2,330,929 Square Feet

Source: Manatee County Planning Department, 2013.

There has been a change in the land use development patterns between 1974 and near-present day. In 1974, the land use within the project area was predominantly agricultural (13,736 acres), wetlands (4,521 acres), and rangelands (3,836 acres) (Manatee County Land Use Maps). Urban land use was comprised of 332 acres, the smallest land use by area. These land uses were fairly contiguous in the project area. However, 25 years later, the urban land use swelled to 4,364 acres and rangelands dropped to 773 acres. Wetlands had a minor reduction, possibly because of the amount of uplands available for development with fewer regulatory requirements and mitigation.

4.6.6 FUTURE AND PROJECTED REGIONAL GROWTH (2030)

The growth trend in Manatee County is primarily encompassed by an increase of residential and commercial development. The population projections and approved development entitlements identify that the area has capacity for future growth. These development approvals were made independently of the proposed bridge over the Manatee River, relying solely on the existing transportation network.

A comparison of the historic land use, present-day land use, and projected land use, as per Manatee County's land use mapping, illustrates a trend where there has been a loss of agricultural and rangelands, with a smaller loss of wetlands, as illustrated previously in Figure 1-7. The comparison utilized land use information that does not include the development of the Proposed Action. Land use in 1974 indicated large tracts of land utilized for agricultural and range operations. Interconnected wetlands existed adjacent to the Manatee River with extensions into some of the agricultural and rangelands. Development and urban areas occurred in the western part of the county and were small in size compared to the agricultural and rangelands.

In 1999, the amount of rangelands and agricultural areas west of I-75 were reduced in size. Development and urban areas occurred along major roadways and the agricultural and rangelands have become more fragmented. There appears to be a slight loss of wetlands, however, there is a greater loss of agricultural and rangelands to development. The projected land use in 2030 illustrates widespread development on both sides of the Manatee River, with extensive loss of agricultural and rangelands, as well as wetlands.

The results of the analysis indicate that the two build alternatives are located in an area experiencing population growth and development and that this growth and development are projected to continue in the foreseeable future. Development in this area is resulting in the conversion of agricultural land use to mixed-use developments and is consistent with Manatee County's proposed Future Land Use. Implementation of either the Fort Hamer Alternative or the Rye Road Alternative would have minimal, if any, effect on these growth and development trends.

4.6.7 CUMULATIVE IMPACTS BY ISSUE

As previously discussed in Section 4.5 and in the paragraphs above, past and present actions have dramatically altered the project area, and reasonably foreseeable future actions would continue to affect the region in such that same pattern as to-date. Regardless of the selected alternative, these actions are expected to continue to have cumulative impacts to the human and natural environment as summarized below.

4.6.7.1 Social Impacts

No-Build Alternative

With the implementation of the No-Build Alternative, the cumulative effect of past, present, and reasonably foreseeable future actions within the project area would be the steady conversion of remaining rural lands to residential developments interspersed with public lands and recreation areas (e.g., Fort Hamer Park, Hidden Harbour Park, and Rye Preserve). Limited commercial and service developments are planned in the project area. Therefore, it would be necessary for current and future residents to travel by private vehicle or public transportation to areas outside the project area to obtain goods and services and to reach employment areas. As a result, traffic counts are expected to increase throughout the project area resulting in localized increases in air emissions and noise.

Fort Hamer Alternative

The cumulative social impacts of the implementation of the Fort Hamer Alternative include the same conversion of remaining undeveloped lands in the project area to residential developments with interspersed public lands and recreation areas as with the No-Build Alternative. Even with a new bridge connecting Upper Manatee River Road and Fort Hamer Road, it would still be necessary for current and future residents in the project area to travel outside the project area to obtain goods and services and to reach employment areas. A large increase in AADT on Upper Manatee River Road and Fort Hamer Road would result with the Fort Hamer Alternative; however, by providing more direct access to goods, services, and employment areas, implementation of the Fort Hamer Alternative would result in a reduction in VMT and VHT compared to the No-Build Alternative and Rye Road Alternative. The Fort Hamer Alternative is within the Urban Services Boundary (Figure 4-1) and is not anticipated to alter current, projected, or planned growth patterns in the study area.

Rye Road Alternative

The cumulative social impacts of the implementation of the Rye Road Alternative include the same conversion of remaining undeveloped lands in the project area to residential developments, public lands, and recreation areas with the No-Build Alternative and Fort Hamer Alternative. With the addition of two more lanes of capacity along the Rye Road Alternative, it would still be necessary for current and future residents in the project area to travel outside the project area to obtain goods and services and to reach employment areas. Because the Rye Road Alternative is located further from retail and employment areas compared to the Fort Hamer Alternative, implementation of the Rye Road Alternative would not results in a reduction in VMT and VHT compared to the No-Build Alternative and Fort Hamer Alternative.

The Rye Road Alternative is located at the eastern edge of the Urban Services Boundary (Figure 4-1) and generally defines the surface transportation edge to that boundary. Development of the Rye Road Alternative would require amendments to the Manatee County's Comprehensive Plan and LRTP and, therefore, increases pressure to amend the future land use map to alter the growth pattern east of Rye Road. This would lead to the loss of undeveloped land at a much higher rate than currently anticipated.

4.6.7.2 Cultural Resource Impacts

No-Build Alternative

It is anticipated that growth and development would continue within the project area and County-wide even with the implementation of the No-Build Alternative. That anticipated growth would be guided by F.S. 267 (Historical Resources) which provides the state process to adhere to the NHPA. However, due to this process, cumulative effects to cultural resources are expected to be minimal.

Fort Hamer Alternative

Given the projected growth pattern, potential future impacts to cultural resources are anticipated to be minimal due to established State of Florida processes defined in F.S. 267. Due to the definition of historic structures as "structures in excess of 50 years," the number of potentially eligible structures would increase in the extreme northern portion of the study area. However, due to the relatively recent development of the larger study area, most structures would not be considered eligible until 2040.

Rye Road Alternative

Potential cumulative effects from the Rye Road Alternative are anticipated to be similar to the Fort Hamer Alternative with the exception of possible alterations in growth patterns to the east. This portion of Manatee County is relatively undeveloped and agricultural. Increased development presence in this area would subject current and future historic structures and archaeological resources to be exposed to a much higher possibility of involvement and impact.

4.6.7.3 Natural Environment Impacts

No-Build Alternative

The historic conversion of native upland habitats to pasture and cropland and then to residential, educational, and recreational uses with associated roadway development is the largest cumulative impact to natural resources within the project area. The historic loss of habitat and hunting pressure in the region has already resulted in the extirpation of the Florida black bear and Florida panther from the project area. With expected further development, hunting would likely decrease in the project area; however, remaining wildlife populations, including state- and federally-listed species, would continue to lose upland habitats. Wetlands such as stream swamps and marshes are less likely to be developed due to existing regulatory protections. Within the project area, the loss of upland habitats and, to a lesser degree, wetland habitats would continue into the foreseeable future until full build-out has been achieved, as approved by Manatee County. These impacts are expected to occur even with the implementation of the No-Build Alternative.

Increased impervious areas associated with existing and planned development and roadway projects in the project area have resulted, and would continue to result, in increased stormwater runoff. Prior to implementation of stormwater treatment regulations, this runoff usually discharged directly into receiving waters resulting in degradation of water quality and aspirating localized flooding. Current regulations require stormwater runoff from most developments and transportation projects to be captured and routed through a stormwater treatment system designed to meet specific standards. Encroachment into designated flood zones is required to be off-set by a similar enlargement of the storage capacity within the same drainage basin. All development and infrastructure improvement projects associated with the No-Build Alternative would be designed and constructed according to the current criteria for protecting water quality and quantity and flood zones. Thus, the cumulative impacts to water quality and quantity and flood zones within the project area as a result of the No-Build Alternative are expected to be minimal.

Fort Hamer Alternative

The cumulative natural resource impacts associated with the Fort Hamer Alternative may be viewed as a combination of the impacts resulting from the No-Build Alternative and the direct and indirect impacts resulting from the Fort Hamer Alternative. The same development and habitat loss associated with the No-Build Alternative would still occur with implementation of the Fort Hamer Alternative; however, implementation of the Fort Hamer Alternative would result in the incremental loss of additional upland and native wetland habitats as described in Section 3.3.1. The loss of wetland habitats resulting from the Fort Hamer Alternative would be off-set with the implementation of an agency-approved wetland mitigation plan; however, no such requirement exists for the loss of upland habitats. The cumulative loss of upland habitats within the project area is not expected to jeopardize the continued existence of any populations of state- and federally-listed species. Implementation of the Fort Hamer Alternative would result in less traffic on I-75 and US 301 in the project area; however, substantially greater traffic would

occur on Upper Manatee River Road and Fort Hamer Road. The traffic increase on these roads would result in a greater potential for wildlife road kill.

Similar to the development and infrastructure improvement projects associated with the No-Build Alternative, the Fort Hamer Alternative would be designed and constructed according to the current criteria for protecting water quality and quantity and flood zones. As a result, no additional adverse impacts to water quality/quantity and flood zones above those associated with the No-Build Alternative are expected with the implementation of the Fort Hamer Alternative.

Rye Road Alternative

The cumulative natural resource impacts associated with the Rye Road Alternative include those resulting from the No-Build Alternative plus the direct and indirect impacts resulting from the Rye Road Alternative. The same development and habitat loss associated with the No-Build Alternative would still occur with implementation of the Rye Road Alternative; however, implementation of the Rye Road Alternative would result in the incremental loss of additional upland and native wetland habitats as described in Section 3.3.1. The loss of wetland habitats resulting from the Rye Road Alternative would be off-set with the implementation of an agency-approved wetland mitigation plan; however, no such requirement exists for the loss of upland habitats. The cumulative loss of upland habitats within the project area is not expected to jeopardize the continued existence of any populations of state- and federally-listed species. Implementation of the Rye Road Alternative is not expected to result in appreciably greater traffic volumes in the project area; however, the two additional travel lanes would result in a greater potential for wildlife road kill along the length of the alternative.

Similar to the development and infrastructure improvement projects associated with the No-Build Alternative, the Rye Road Alternative would be designed and constructed according to the current criteria for protecting water quality and quantity and flood zones. As a result, no additional adverse impacts to water quality/quantity and flood zones above those associated with the No-Build Alternative are expected with the implementation of the Rye Road Alternative.

4.6.7.4 Physical Impacts

No-Build Alternative

An incremental increase in noise and air quality impacts are expected throughout the project area as a result of existing and planned development associated with the No-Build Alternative. Temporary increases in noise, fugitive dust, and exhaust emissions are expected at construction sites during construction of these developments and associated infrastructure improvements. Minimal to no cumulative impacts to contaminated sites and navigation are expected in the project area with implementation of the No-Build Alternative.

Fort Hamer Alternative

Implementation of the Fort Hamer Alternative would result in substantially greater traffic volumes on Upper Manatee River Road and Fort Hamer Road, which would result in increased noise and vehicle emissions along these roads compared to the No-Build Alternative. However,

this localized increase in noise and vehicle emissions is off-set by the overall reduction in VMT and VHT (with accompanying decreases in noise and emissions) in the project area with the operation of the Fort Hamer Alternative. The cumulative impacts to navigation resulting from implementation of the Fort Hamer Alternative consist of restricting the passage of vessels with a vertical clearance requirement greater than 26 feet. Currently, there are only two known vessels with a height requirement exceeding 26 feet located upstream of the proposed location of the bridge for the Fort Hamer Alternative. *De minimus* cumulative impacts resulting from potential contamination sites are expected with the Fort Hamer Alternative.

Rye Road Alternative

Implementation of the Rye Road Alternative is not expected to dramatically alter traffic movements within the project area; thus noise and vehicle emissions are expected to be similar to those associated with the No-Build Alternative. The Rye Road Alternative would not result in any additional impacts to navigation. Minimal cumulative impacts resulting from potential contamination sites are expected with the Rye Road Alternative.

4.7 SUMMARY AND RECOMMENDATION

Chapter 1 of this FEIS identified the Purpose and Need to construct additional travel lanes across the Manatee River between I-75 and Rye Road. The analyses conducted in Chapter 2 resulted in the determination that the No-Build Alternative does not meet the stated Purpose and Need and further identified two build alternatives (the Fort Hamer Alternative and the Rye Road Alternative) that met all or most of the stated Purpose and Need for the Proposed Action. The only defined need not met is the inability of the Rye Road Alternative to improve emergency response times. Both build alternatives meet all other defined needs of the Proposed Action; however, the Rye Road Alternative only minimally improves the local roadway network LOS and only minimally accommodates planned growth in the area.

Table 4-27 summarizes the social, cultural, natural environment, and physical impacts of the No-Build and two build alternatives, as discussed earlier in this chapter. The No-Build Alternative results in the fewest adverse impacts compared to the build alternatives; however, the No-Build Alternative is inconsistent with the Manatee County's 2020 Comprehensive Plan (Manatee County, 2010) and does not satisfy the demonstrated need for the Proposed Action.

With regards to social impacts, the Fort Hamer Alternative and Rye Road Alternative are similar except for those issues affected by traffic. The Fort Hamer Alternative would result in a large increase in traffic on Upper Manatee River Road and Fort Hamer Road compared to the existing condition. This increase in traffic would likely affect the ingress/egress to the Annie Lucie Williams Elementary School on Fort Hamer Road. However, this condition is to be mitigated by Manatee County with the installation of additional sidewalks and crosswalks at the school.

Both build alternatives would have minimal to no impacts on cultural resources. The widening of the Rye Road Bridge for the Rye Road Alternative would have a minimal impact on the Rye Preserve.

The Fort Hamer Alternative would have less wetland dredge/fill impacts, but more shading impacts than the Rye Road Alternative. There are more floodplain impacts associated with the Fort Hamer Alternative. These unavoidable impacts would be mitigated in accordance with federal and state permit requirements. Neither build alternative is likely to adversely affect any listed species or designated critical habitat although both build alternatives do involve crossing designated critical habitat for the West Indian manatee.

TABLE 4-27
COMPARATIVE EVALUATION SUMMARY

Section	Issue	No-Build Alternative	Fort Hamer Alternative	Rye Road Alternative
SOCIAL IMPACTS				
4.1.1	Socioeconomic Conditions	No anticipated adverse impacts.	No anticipated adverse impacts. Proposed Action should benefit socioeconomic conditions in the project area.	No anticipated adverse impacts. Proposed Action should benefit socioeconomic conditions in the project area.
4.1.2	Land Use Characteristics (Existing and Future)	Inconsistent with Manatee County's 2020 Comprehensive Plan.	Minimal adverse impacts to existing and future land uses. Consistent with Manatee County's 2020 Comprehensive Plan future land use.	Minimal adverse impacts to existing and future land uses. Consistent with Manatee County's 2020 Comprehensive Plan future land use.
4.1.3	Traffic	74,200 AADT increase on I-75 from SR 64 to US 301 (2035) LOS F. County-wide increase in VMT and VHT.	18,900 AADT increase on Upper Manatee River Road from SR 64 to Waterlefe Boulevard (2035). 23,600 AADT crossing the Manatee River (2035). 21,200 AADT increase on Fort Hamer Road from Manatee River to US 301. 1,400 AADT decrease on I-75 from SR 64 to US 301 (2035). LOS F. County-wide reduction in VMT and VHT.	4,200 AADT increase on Rye Road from Upper Manatee River Road to Golf Course Road (2035). 500 AADT increase on I-75 from SR 64 to US 301 (2035). LOS F. Slight increase in County-wide VMT. Slight decrease in County-wide VHT.
4.1.4	Community Cohesion	No impacts.	No anticipated adverse impacts.	No anticipated adverse impacts.
4.1.5	Relocation Potential	No impacts.	No impacts.	Four residential locations affected.
4.1.6	Religious Centers	No impacts.	Traffic increase.	No anticipated adverse impacts.
	Schools	No impacts.	Traffic increase.	No anticipated adverse impacts.
	Parks and Recreation Areas	No impacts.	Traffic increase.	Traffic increase.
	Public Facilities	No impacts.	No anticipated adverse impacts. Improved emergency vehicle response times.	No anticipated adverse impacts.
	Pedestrian/ Bicycle Facilities	No sidewalks or bicycle lanes to be added.	Proposed Action would provide continuous bicycle lanes and sidewalks.	Proposed Action would provide continuous bicycle lanes and sidewalks.
4.1.7	Environmental Justice	No impacts.	No anticipated adverse impacts.	No anticipated adverse impacts.
4.1.8	Controversy Potential	Low	High	High
4.1.9	Utilities and Railroads	No impacts.	Six utility providers No railroads	Six utility providers No railroads

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TABLE 4-27 (CONTINUED)
COMPARATIVE EVALUATION SUMMARY

Section	Issue	No-Build Alternative	Fort Hamer Alternative	Rye Road Alternative
CULTURAL RESOURCES IMPACTS				
4.2.1	Archaeological	No impacts.	No adverse impacts. See SHPO concurrence letter in Appendix A-4.	No adverse impacts. See SHPO concurrence letter in Appendix A-4.
			The Seminole Tribe of Florida has concurred with the research performed as part of this FEIS. See SHPO concurrence letter in Appendix A-4.	
4.2.2	Historical	No impacts.	No adverse impacts.	No adverse impacts.
NATURAL ENVIRONMENT IMPACTS				
4.3.1	Land Use/Vegetative Cover	No additional impacts.	19.4 acres open land 6.8 acres forest converted to roadway, ROW, and ponds.	19.0 acres agriculture 3.0 acres open land 7.5 acres forest converted to roadway, ROW, and ponds.
4.3.2	Wetlands	No additional impacts.	2.05 acres fill 1.01 acres shading 1.28 acres secondary	2.51 acres fill 0.01 acres shading 0.00 acres secondary
4.3.3	Essential Fish Habitat (EFH)	No additional impacts.	0.16 acres fill 1.01 acres shading	0.00 acres
4.3.4	Wildlife	No additional impacts.	Localized general decline in mammal and bird populations due to habitat loss. Increased potential for road kill.	Localized general decline in mammal and bird populations due to habitat loss. Increased potential for road kill.
4.3.5	Threatened and Endangered Species	No effects.	"May affect, but not likely to adversely affect:" • Smalltooth sawfish (F) • Eastern indigo snake (F) • Wood stork (F) • West Indian manatee (F) • Critical habitat for West Indian manatee (F) • Gopher tortoise (S) • Pine snake (S) • Florida mouse (S) • Gopher frog (S) (F)=Federally-Listed (S)=State-Listed	"May affect, but not likely to adversely affect:" • Crested caracara (F) • Eastern indigo snake (F) • Wood stork (F) • West Indian manatee (F) • Critical habitat for West Indian manatee (F) • Florida scrub jay (F) • Gopher tortoise (S) • Pine snake (S) • Florida mouse (S) • Gopher frog (S) (F)=Federally-Listed (S)=State-Listed
4.3.6	Aquatic Preserves	N/A	N/A	N/A
4.3.7	Water Quality	No additional impacts.	No additional impacts.	No additional impacts.
4.3.8	Outstanding Florida Waters	N/A	N/A	N/A
4.3.9	Wild and Scenic Rivers	N/A	N/A	N/A
4.3.10	Groundwater	No additional impacts.	No additional impacts.	No additional impacts.
4.3.11	Floodplains and Floodways	No additional impacts.	27.9 acres floodplains 0.0 acres floodways Compatible with existing floodplain management programs.	21.8 acres floodplains 0.0 acres floodways Compatible with existing floodplain management programs.
4.3.12	Coastal Zone Consistency	Consistent	Consistent	Consistent

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TABLE 4-27 (CONTINUED)
COMPARATIVE EVALUATION SUMMARY

Section	Issue	No-Build Alternative	Fort Hamer Alternative	Rye Road Alternative
4.3.13	Coastal Barrier Island Resources	N/A	N/A	N/A
4.3.14	Farmlands	N/A	N/A	N/A
PHYSICAL CHARACTERISTICS IMPACTS				
4.4.1	Noise	No impacts.	39 noise-sensitive receptors 1 meets or exceeds the NAC (includes receptors with substantial increase)	183 noise-sensitive receptors 16 meets or exceeds NAC (includes receptors with substantial increase)
4.4.2	Air Quality	Attainment	Attainment	Attainment
4.4.3	Construction	No additional impacts.	Temporary impacts of air quality, vibration, visual, noise, and maintenance of traffic.	Temporary impacts of air quality, vibration, visual, noise, and maintenance of traffic.
4.4.4	Contamination	No additional impacts.	1 Medium Risk Site	13 Low Risk Sites 1 Medium Risk Site
4.4.5	Scenic Highways	N/A	N/A	N/A
4.4.6	Navigation	No additional impacts.	2 vessels	No additional impacts.

Regarding physical impacts, the increased traffic associated with both build alternatives would result in an increase in noise compared to the present-day condition. Although there would be less be less traffic with the Rye Road Alternative compared to the Fort Hamer Alternative, there are a greater number of noise-sensitive receptors along the Rye Road Alternative. Noise impacts can be mitigated by Manatee County with speed restriction and restriction on vehicle size (e.g., trucks).

Navigation on the Manatee River would be minimally affected by the Fort Hamer Alternative; only one sailboat currently exists upstream of the bridge that would be unable to pass beneath the proposed structure. The shallow nature of the river upstream of the proposed bridge at Fort Hamer Road makes it unlikely that additional vessels requiring greater than 26 feet vertical clearance would be affected in the future by the presence of the bridge. An additional bridge structure at the Rye Road crossing of the Manatee River would have no effect on navigation.

Cumulative Effects

Neither the No-Build Alternative nor the Fort Hamer Alternative are anticipated to create any adverse or unmitigable cumulative effects. However, the Rye Road Alternative has the potential of altering the projected growth patterns in eastern Manatee County by adding development pressure east of the Urban Services Boundary and potentially moving that boundary further east.

Recommendation

It is recommended that the Fort Hamer Alternative be approved as the alternative to advance to design and construction.